

FIG. 1

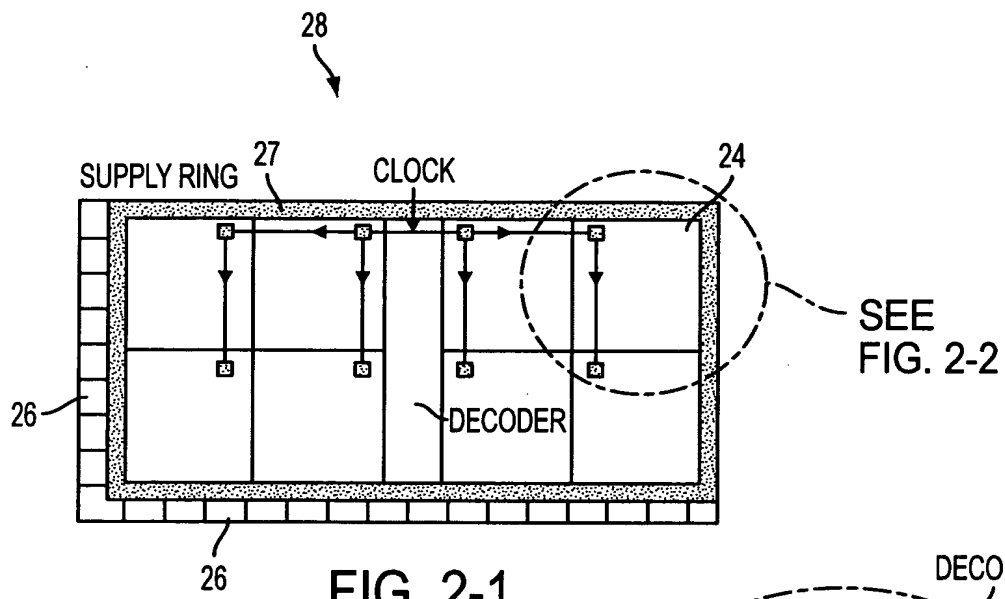


FIG. 2-1

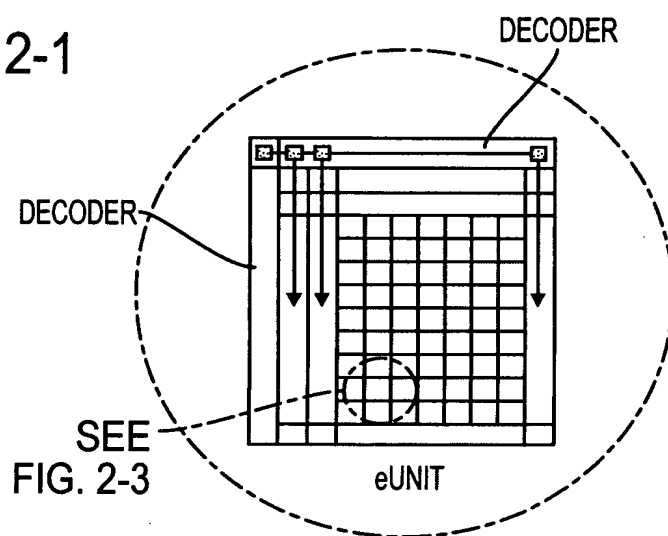


FIG. 2-2

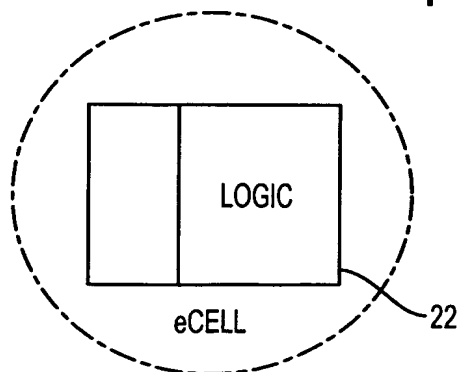


FIG. 2-3

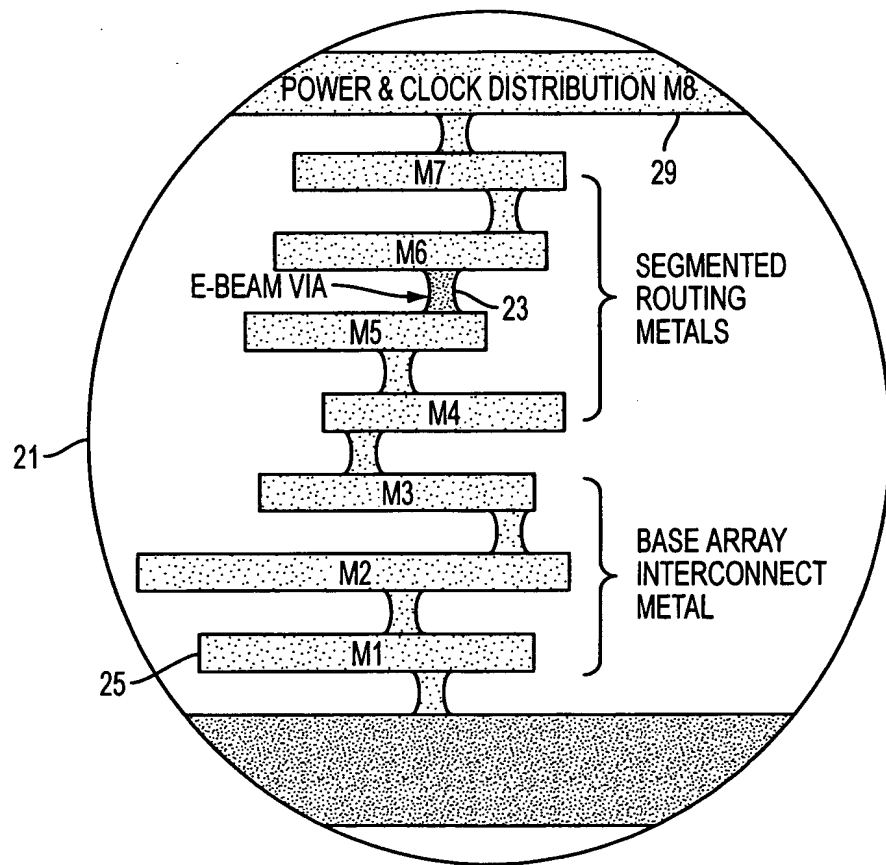


FIG. 2A

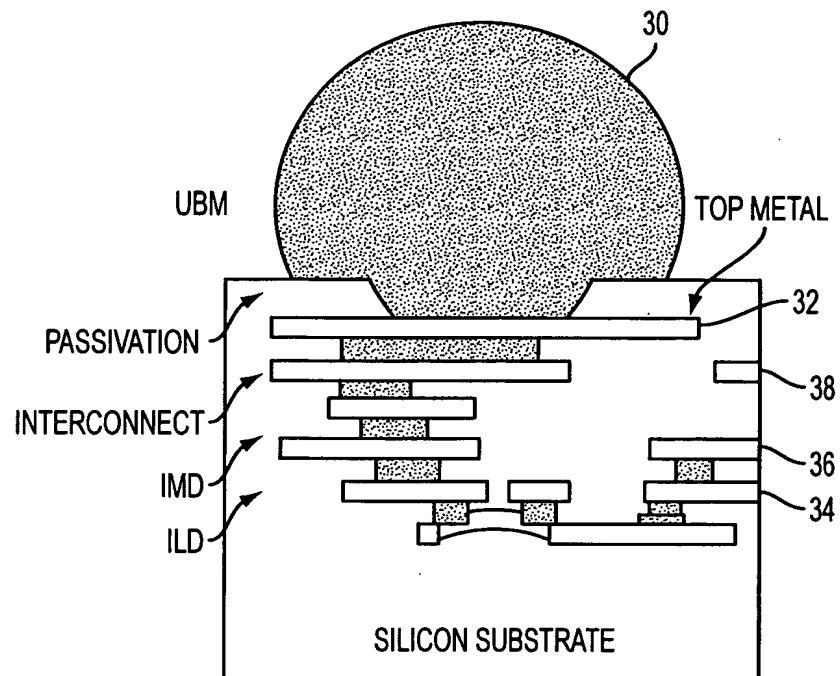


FIG. 3A

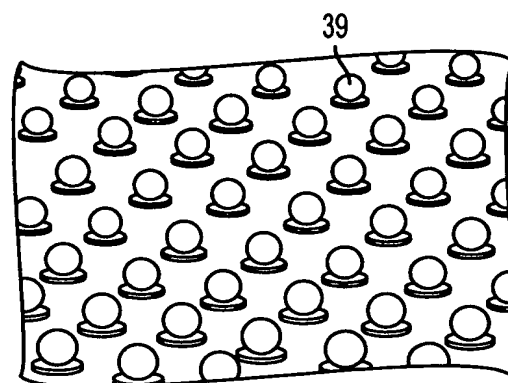


FIG. 3B

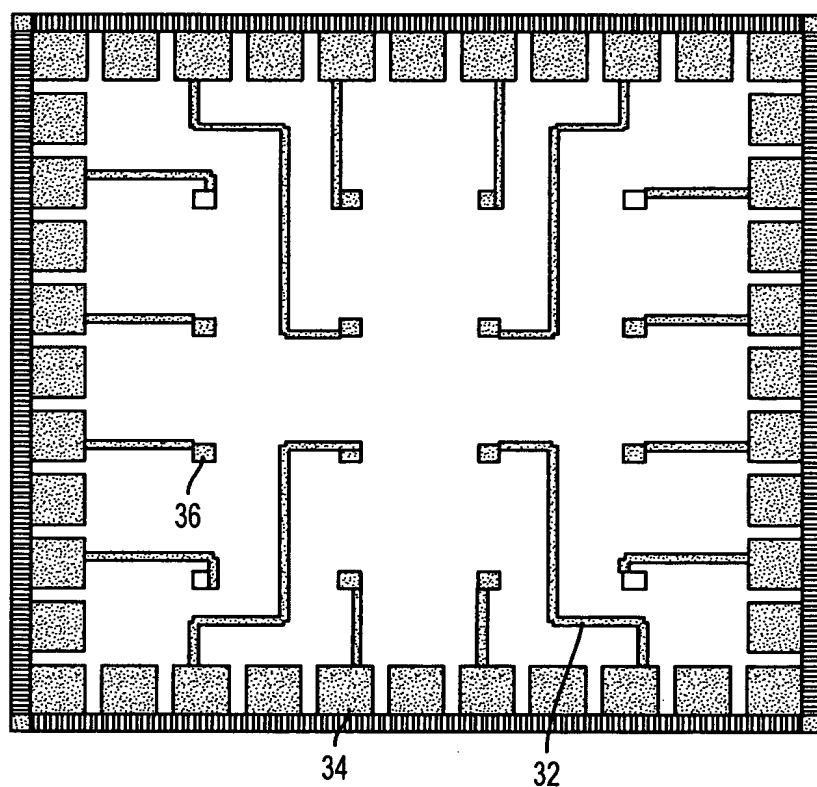


FIG. 3C

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| | | | |
|---|-----------------------|--|---|
| B | BUMP DIAMETER | 150 $\mu\text{m} \pm 10\mu\text{m}$ (IN WAFER) | 70 $\mu\text{m} \pm 10\mu\text{m}$ (IN WAFER) |
| C | Cu BUMP HEIGHT | 20 $\mu\text{m} \pm 3\mu\text{m}$ (IN WAFER) | 10 $\mu\text{m} \pm 3\mu\text{m}$ (IN WAFER) |
| D | BUMP ROOT DIAMETER | 90 μm | 60 μm |
| E | PASSIVATION HOLE SIZE | 70 μm | 40 μm |
| F | BUMP PITCH | 200 μm | 120 μm |

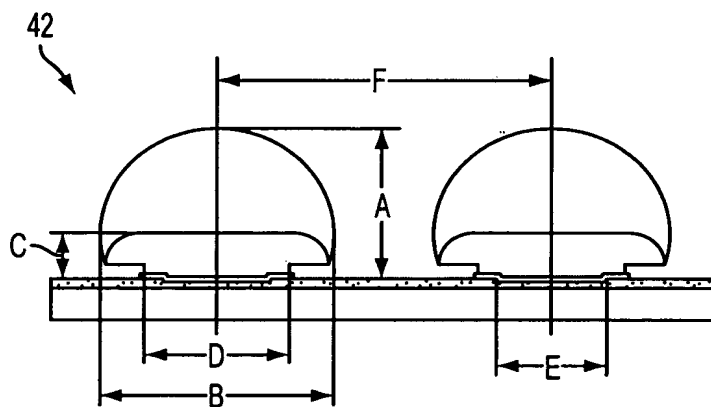


FIG. 4

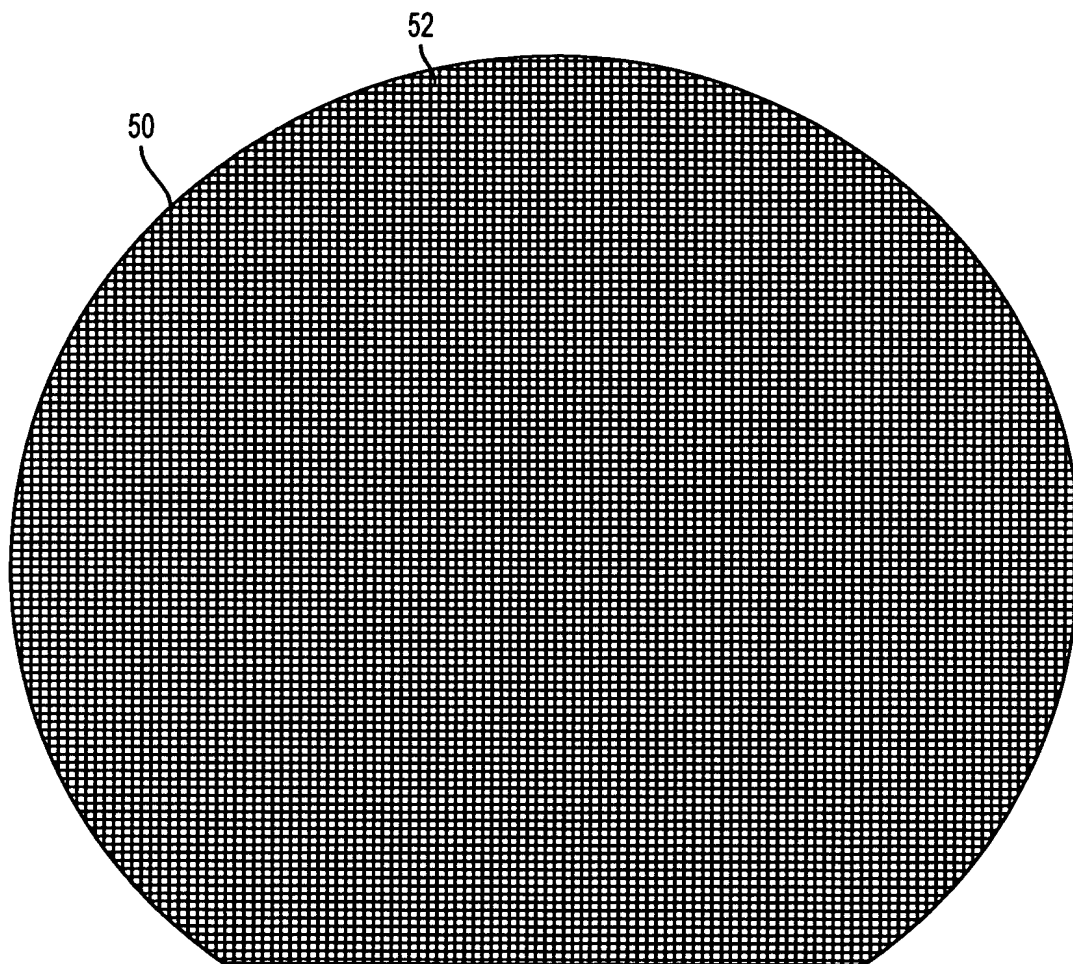


FIG. 5

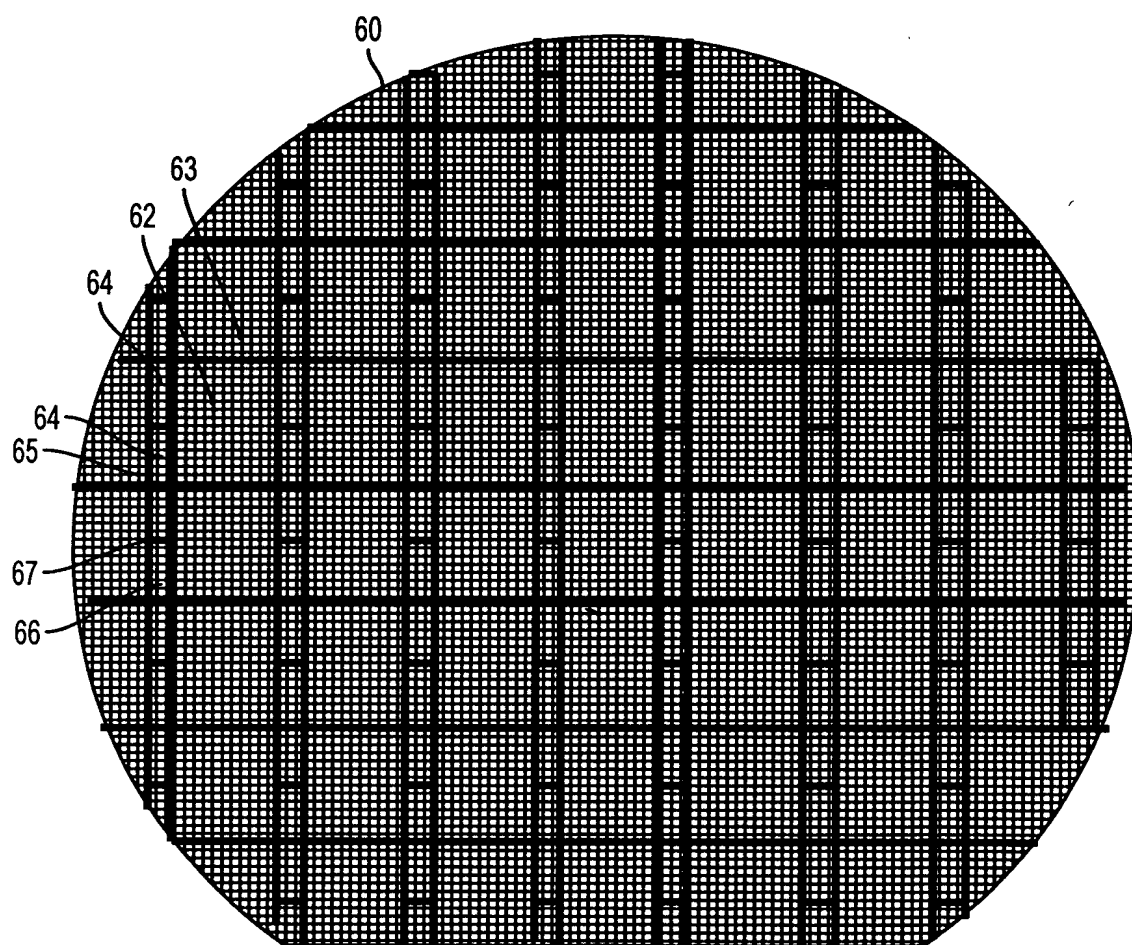


FIG. 6

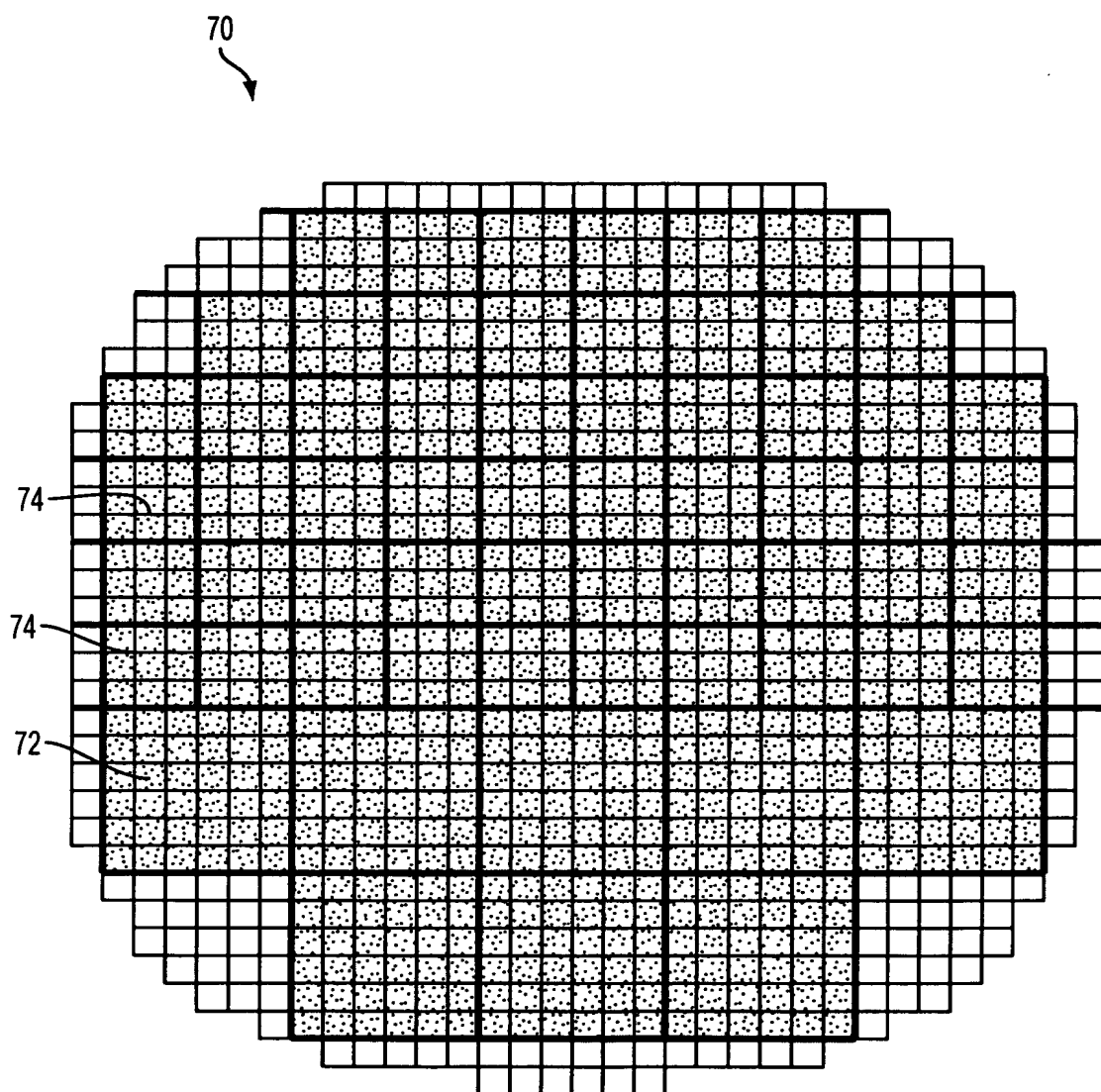


FIG. 7

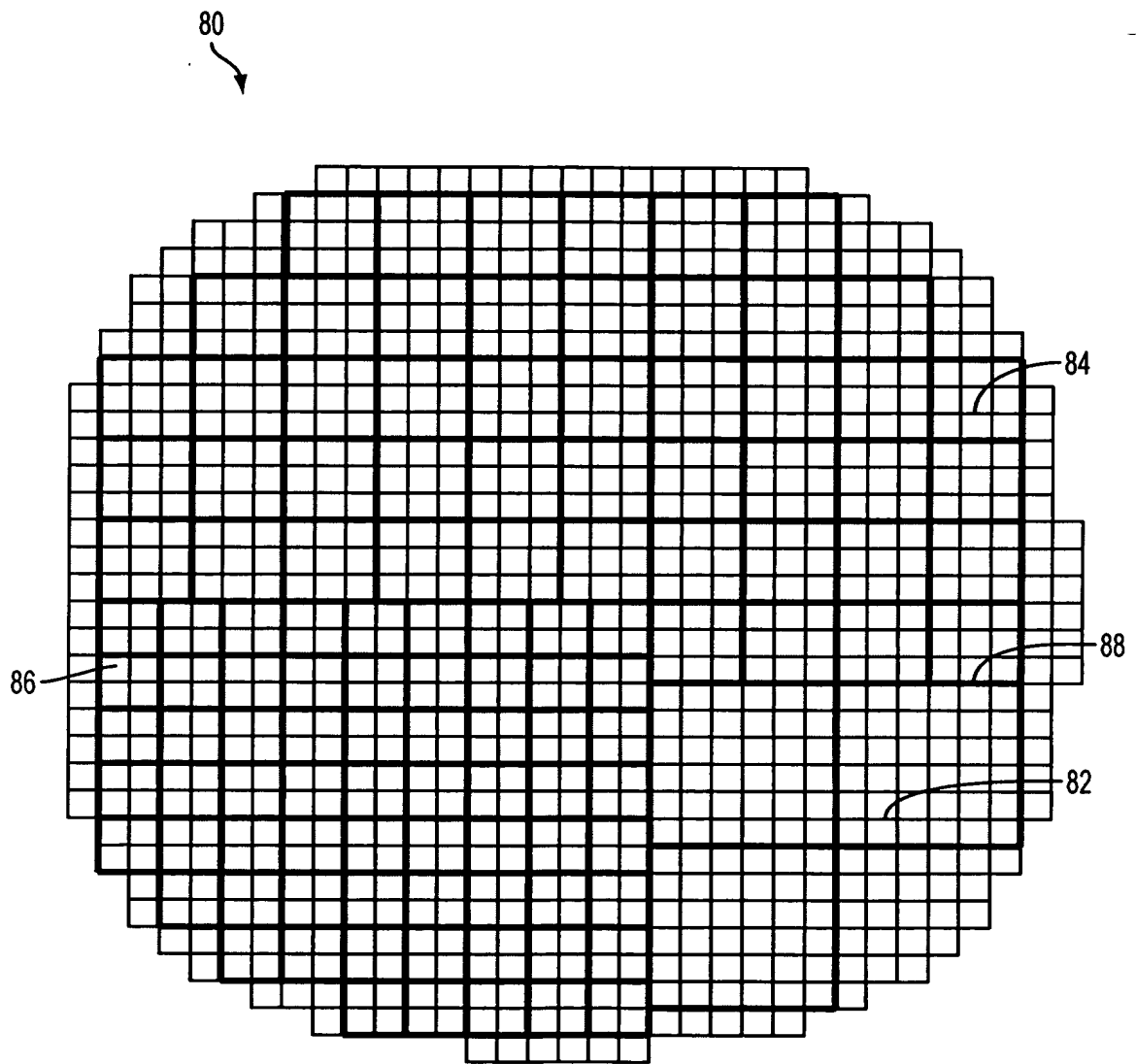
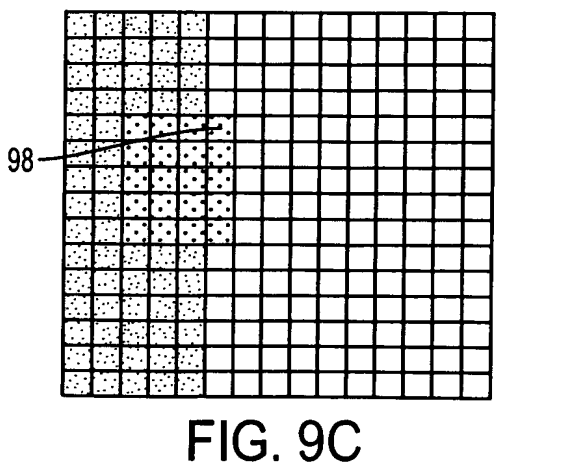
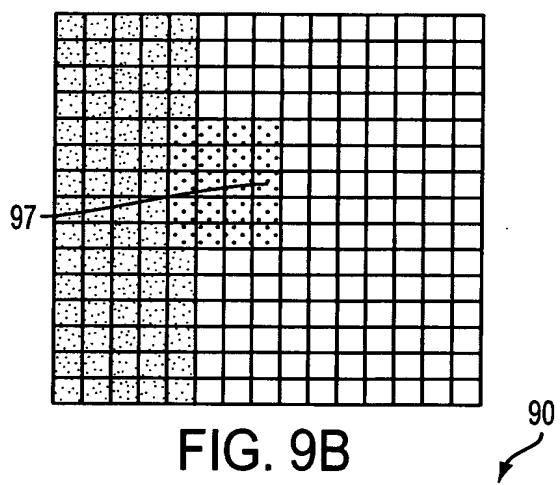
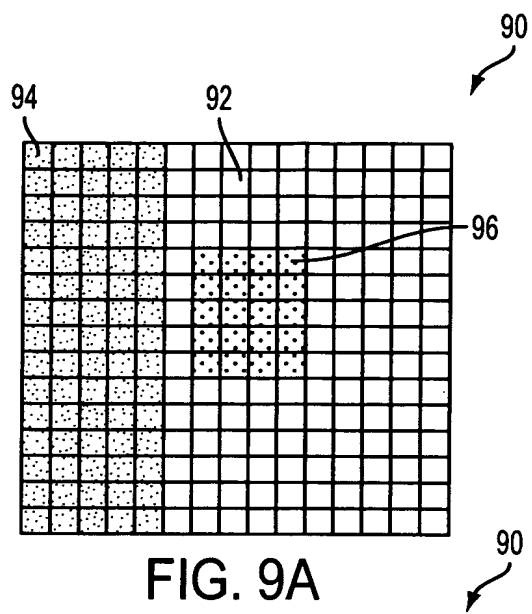


FIG. 8



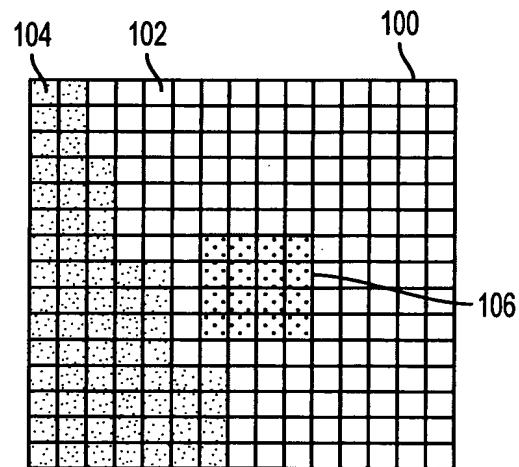


FIG. 10A

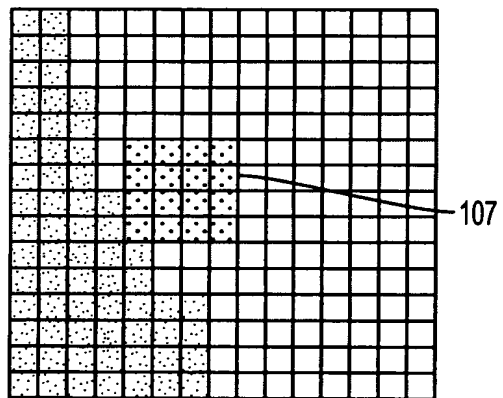


FIG. 10B

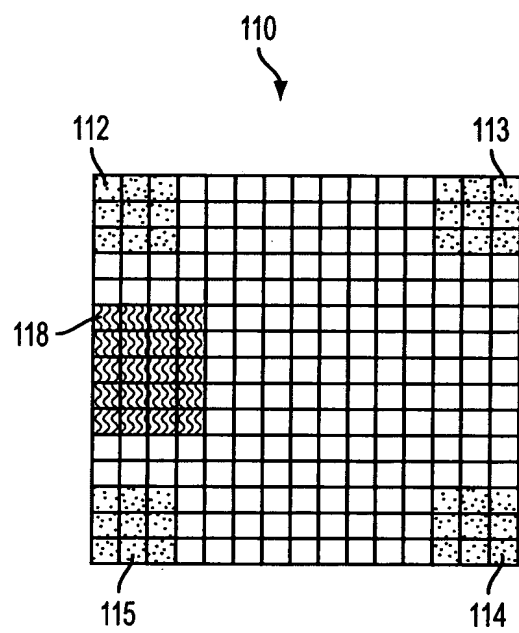


FIG. 11

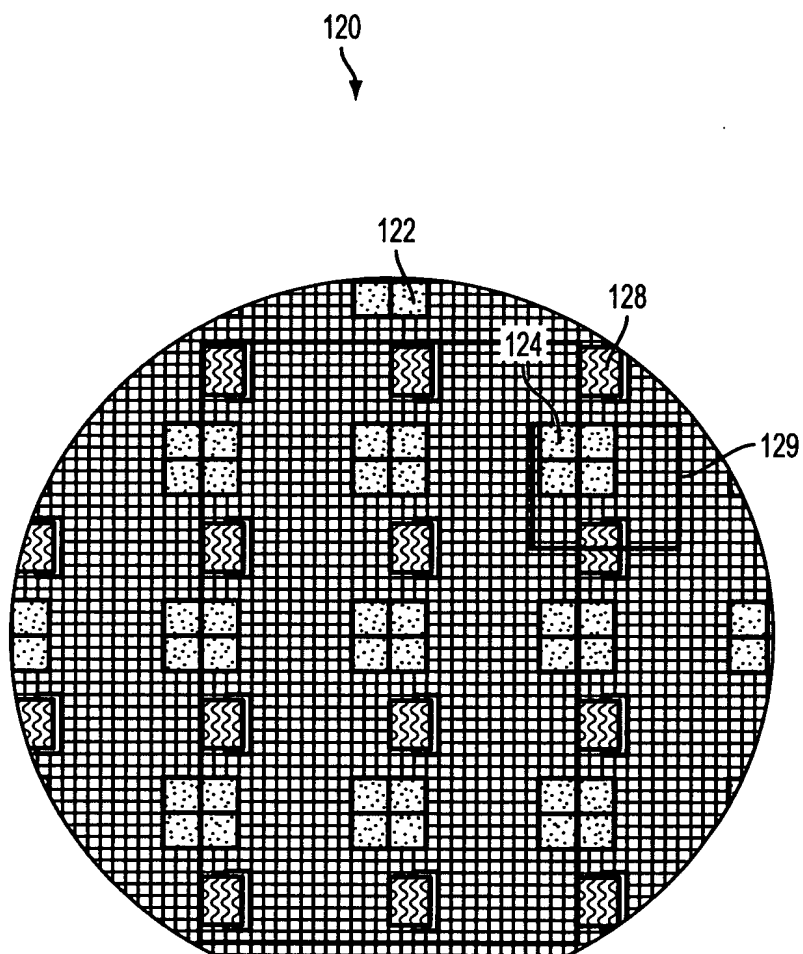


FIG. 12

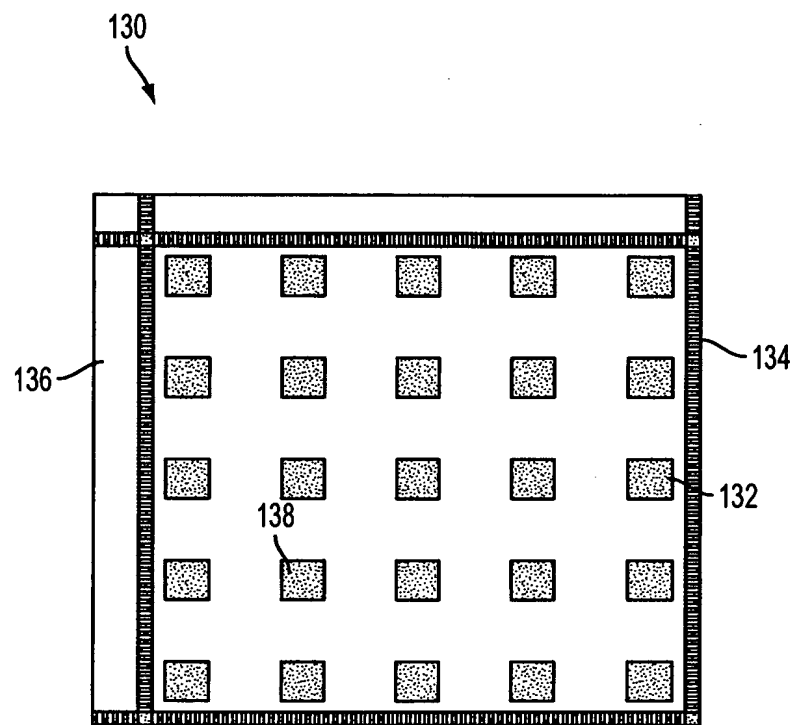


FIG. 13

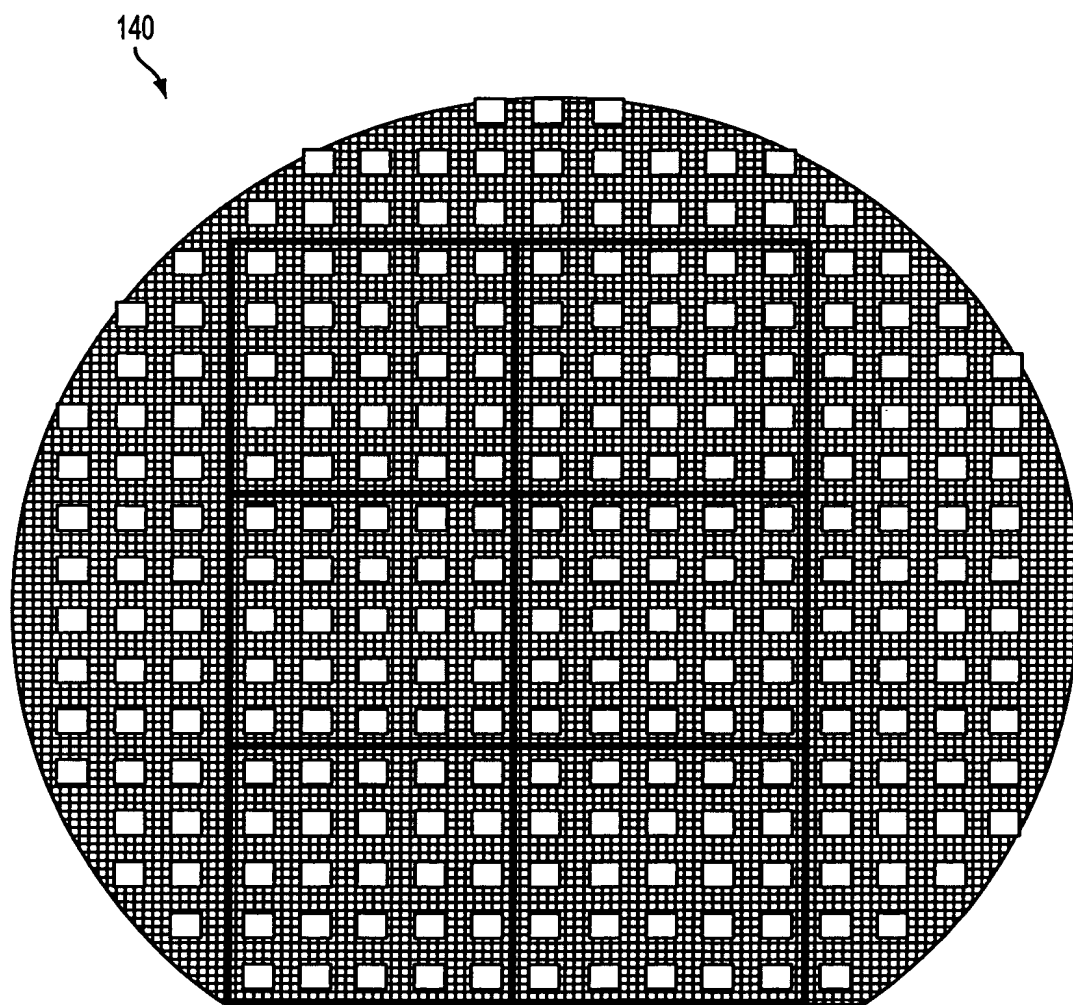
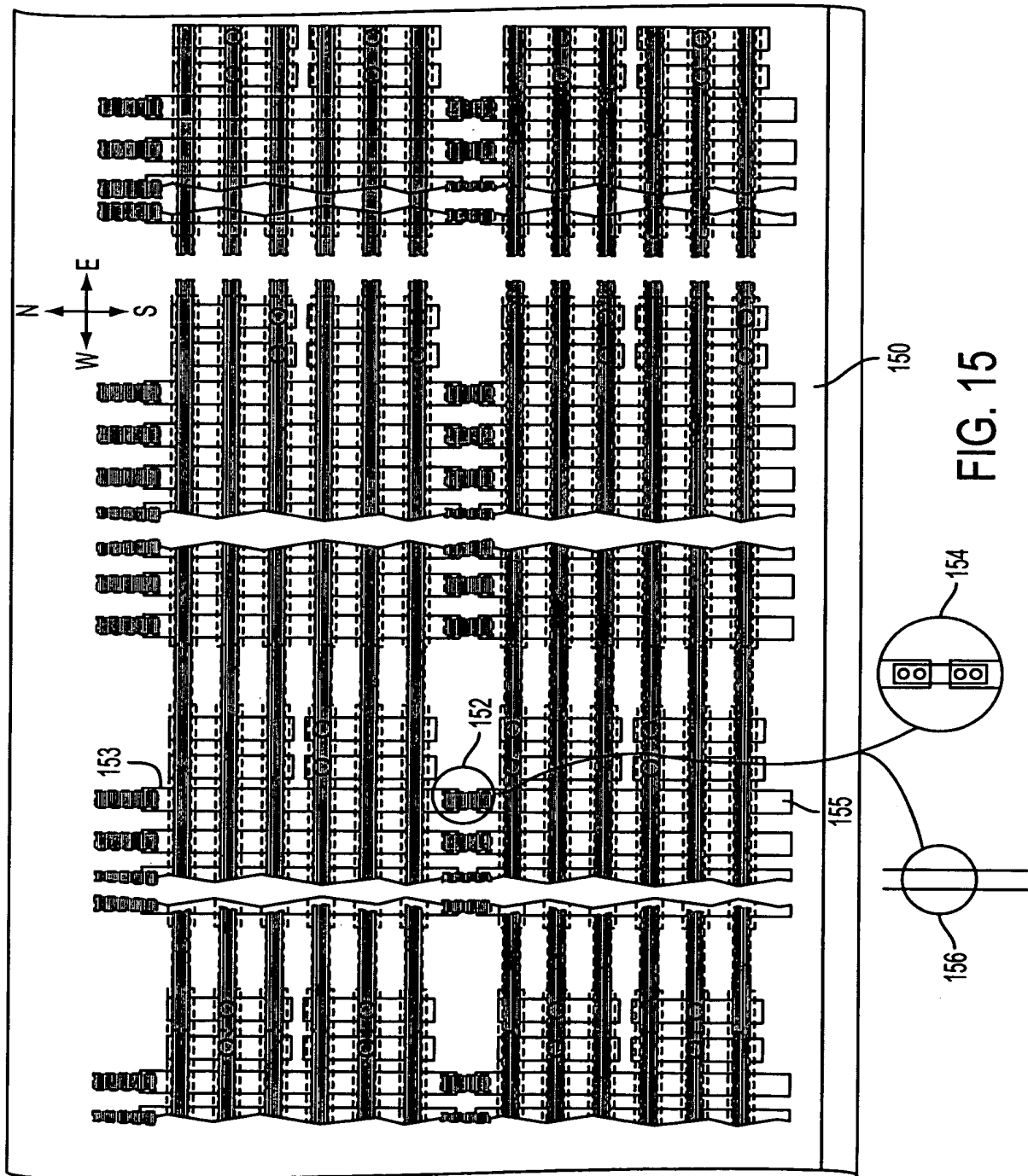
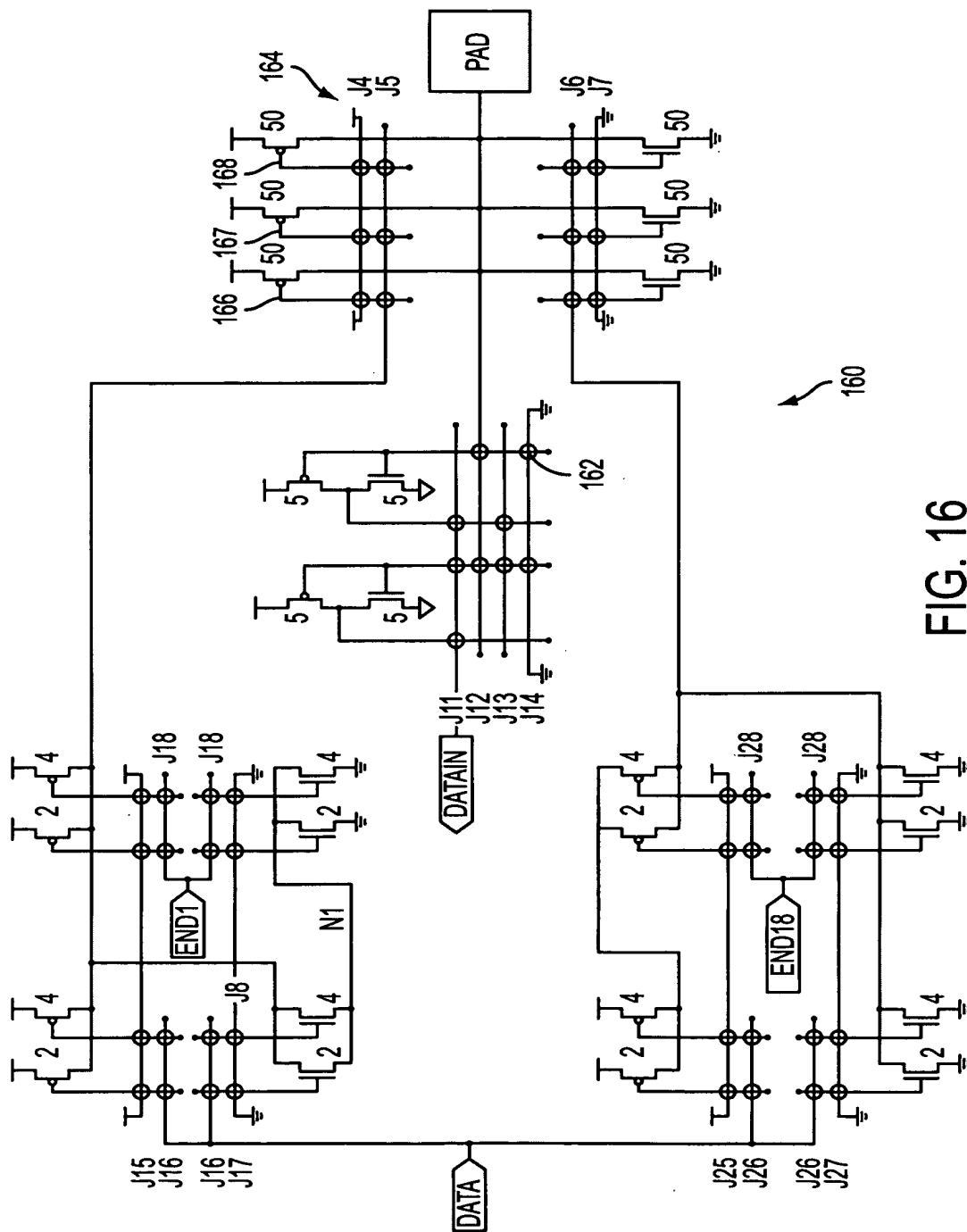


FIG. 14





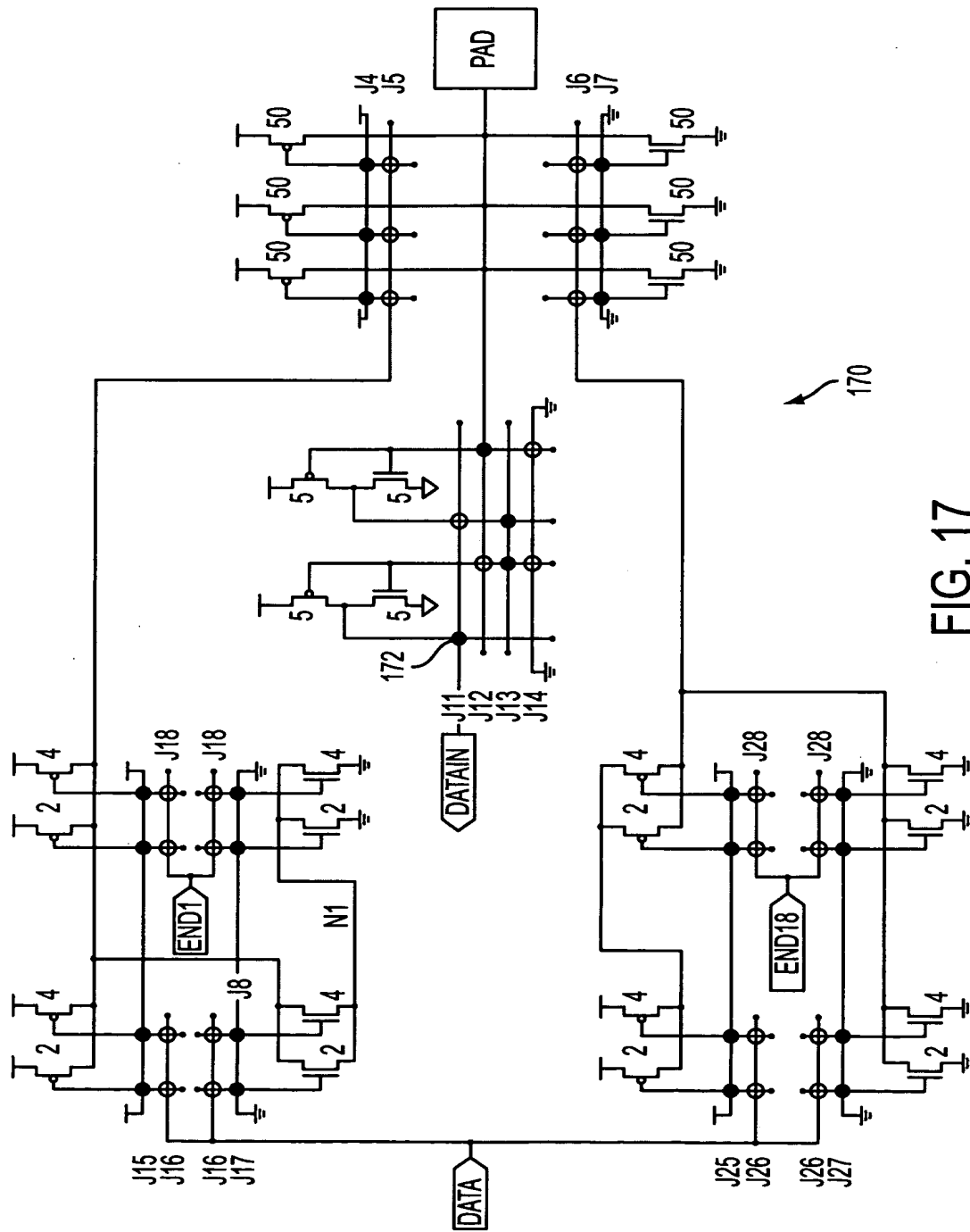
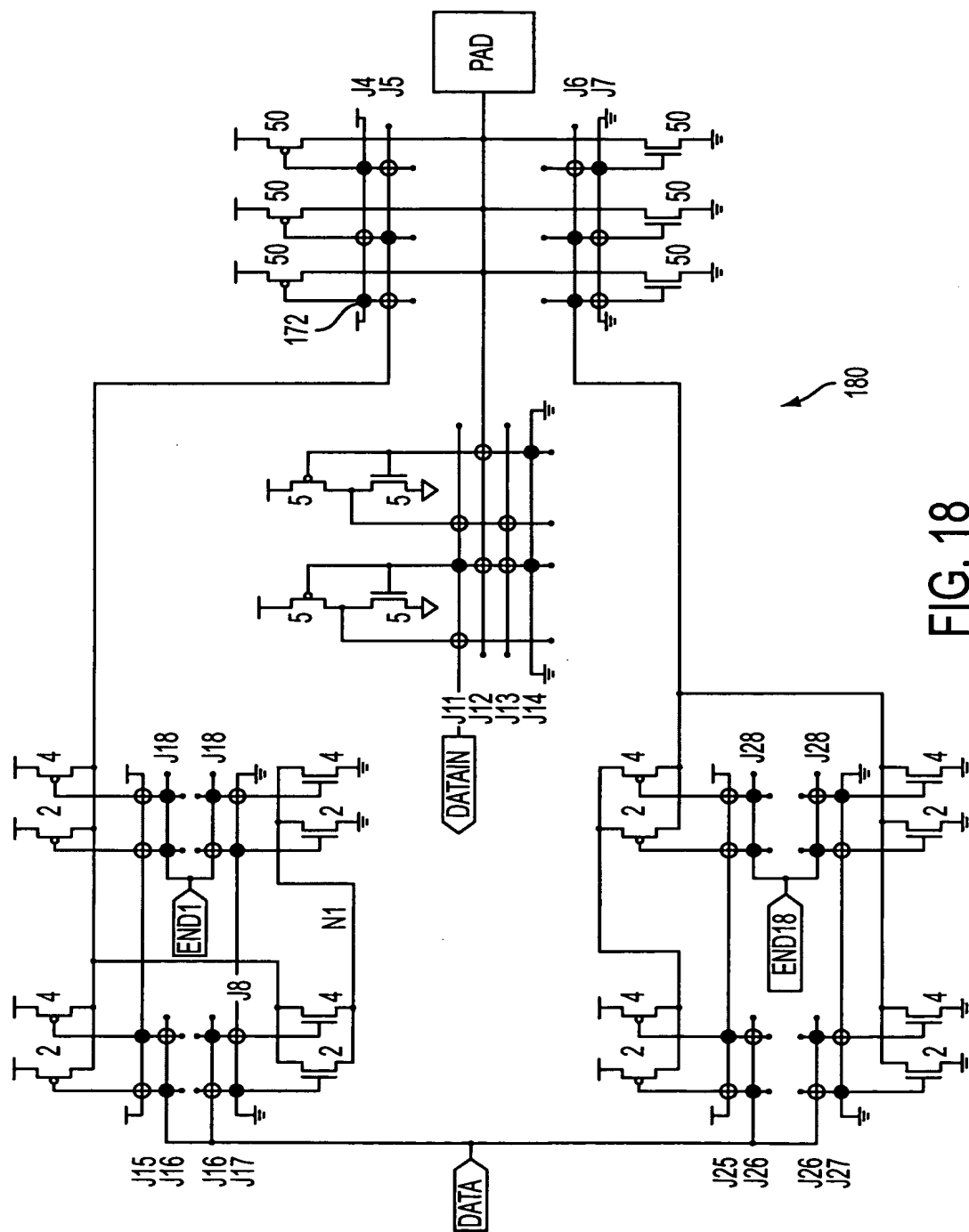


FIG. 17



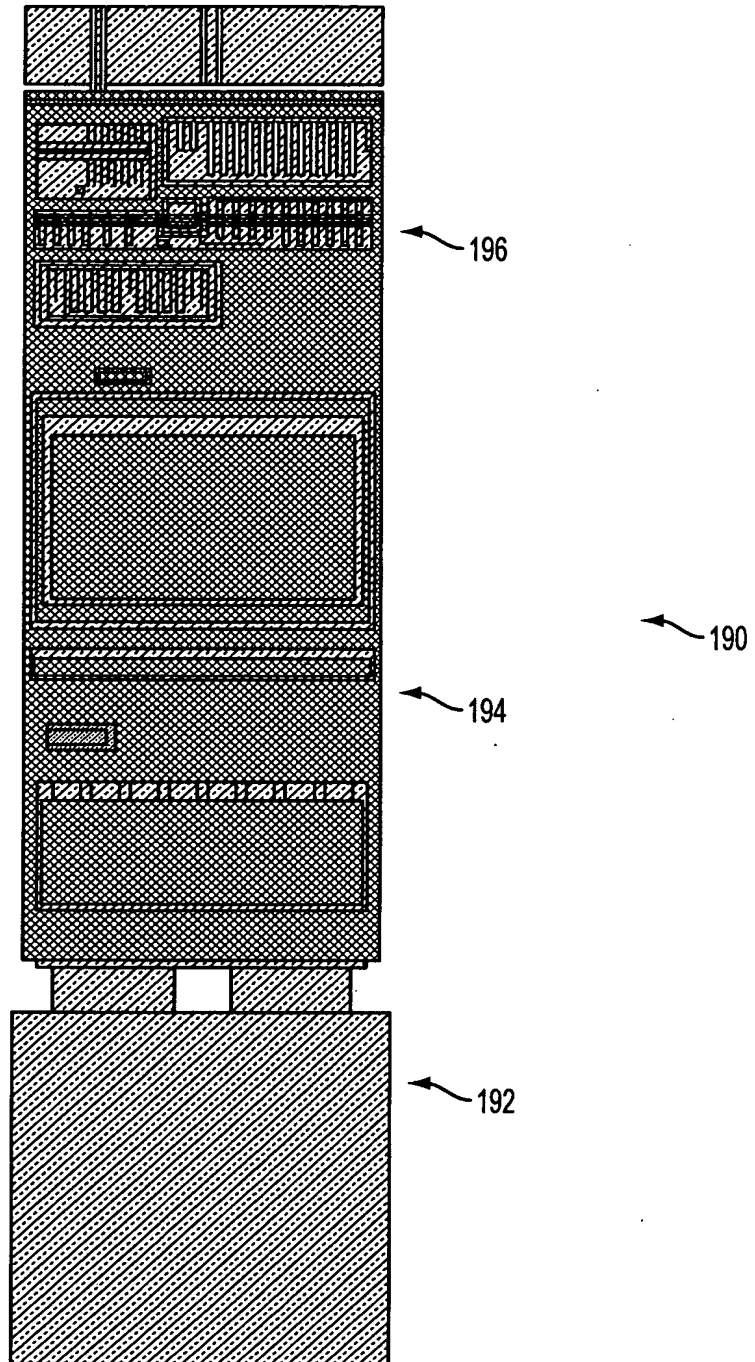


FIG. 19

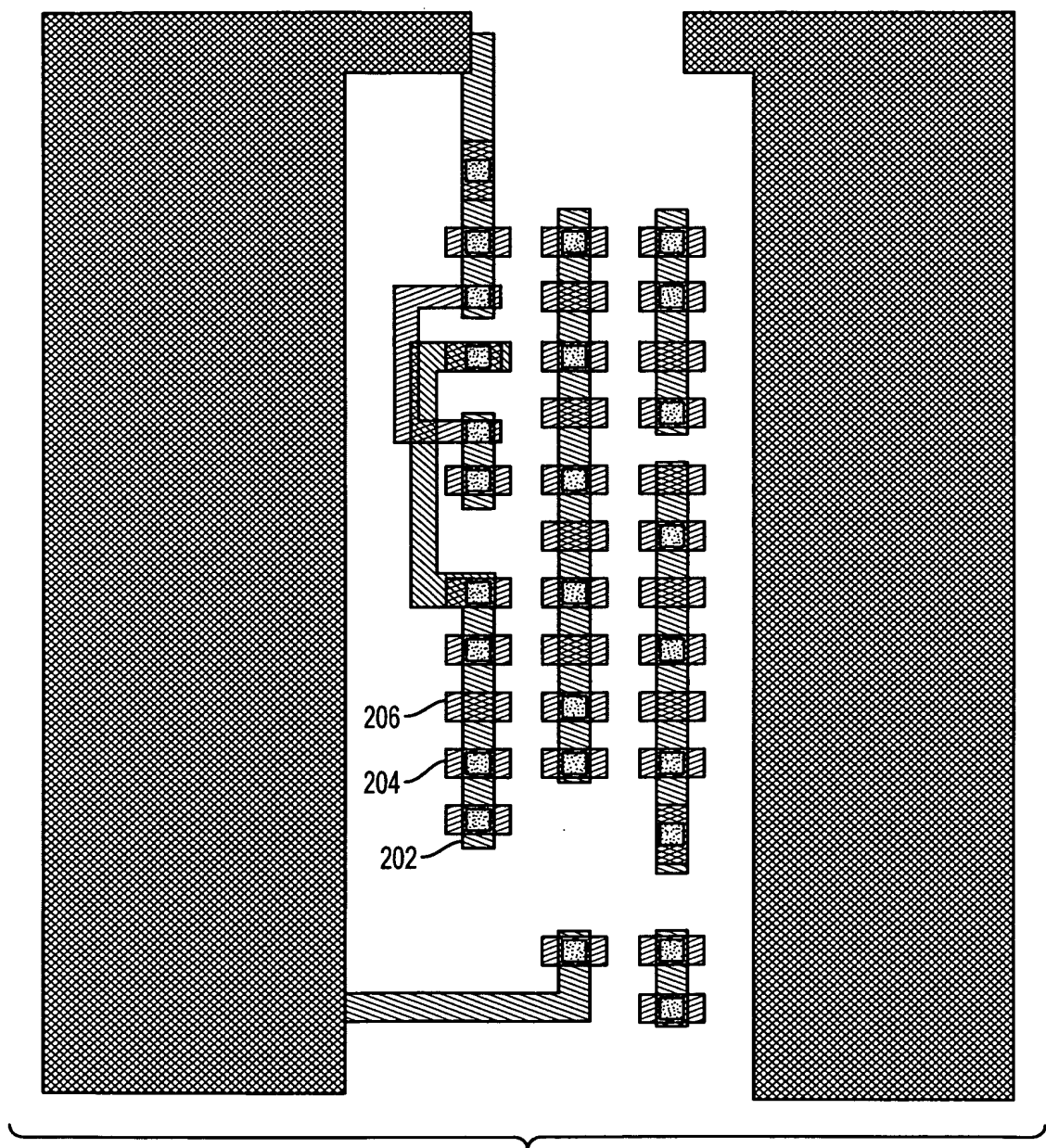
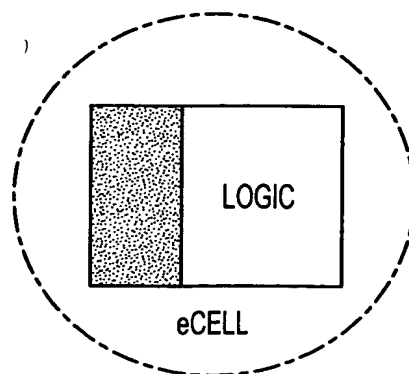
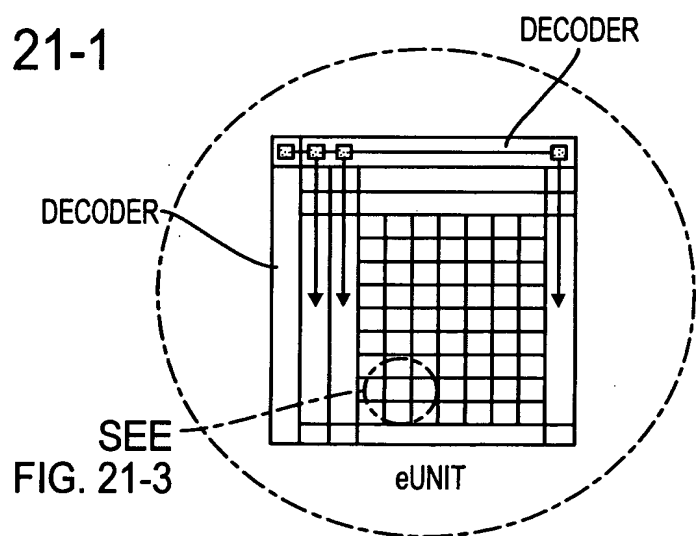
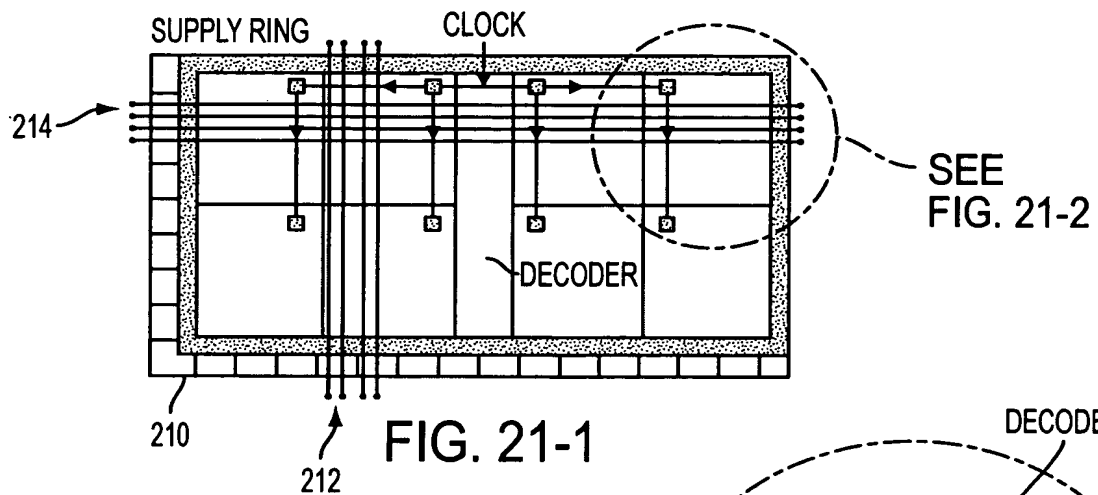


FIG. 20



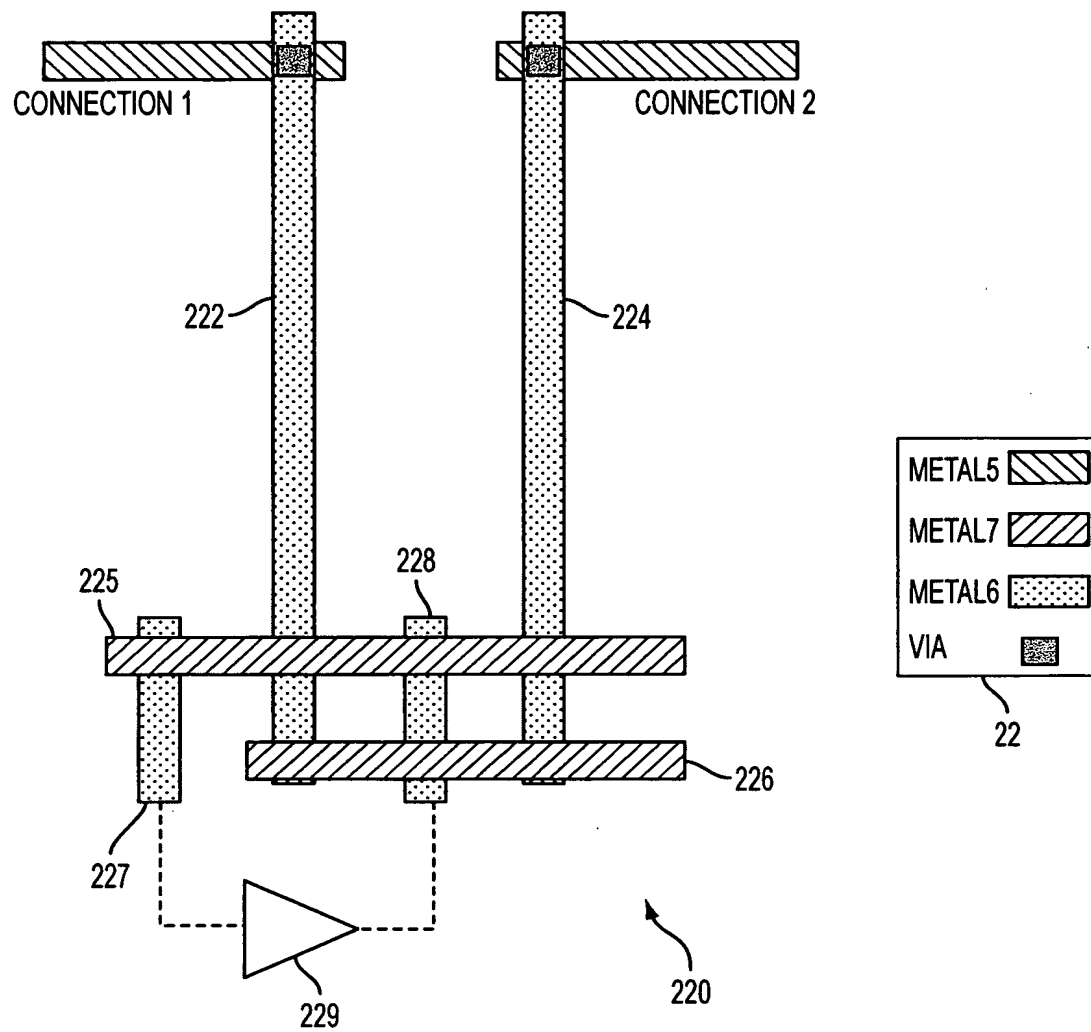


FIG. 22

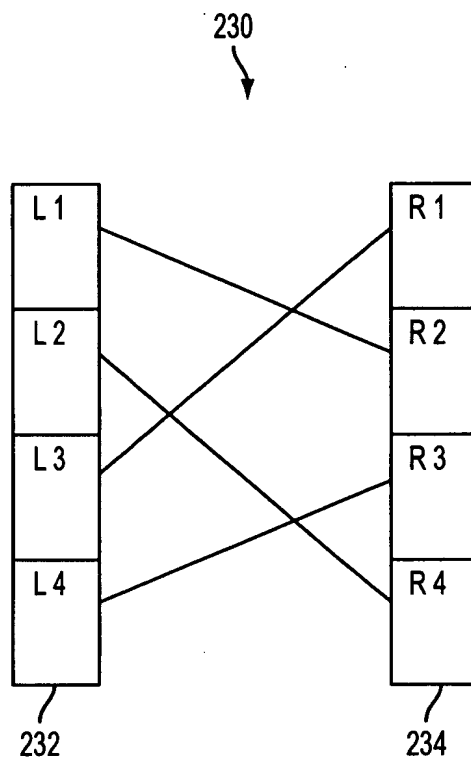


FIG. 23

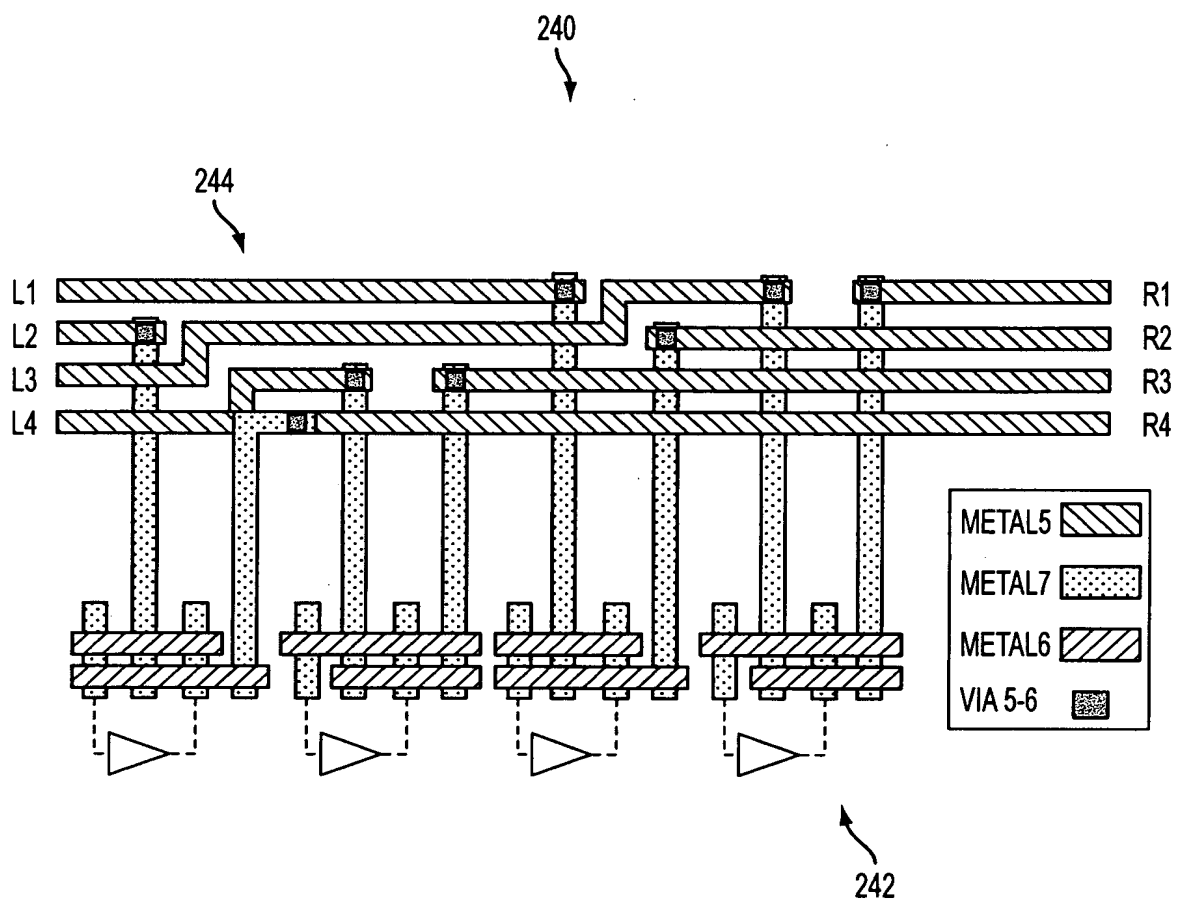


FIG. 24

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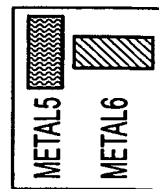
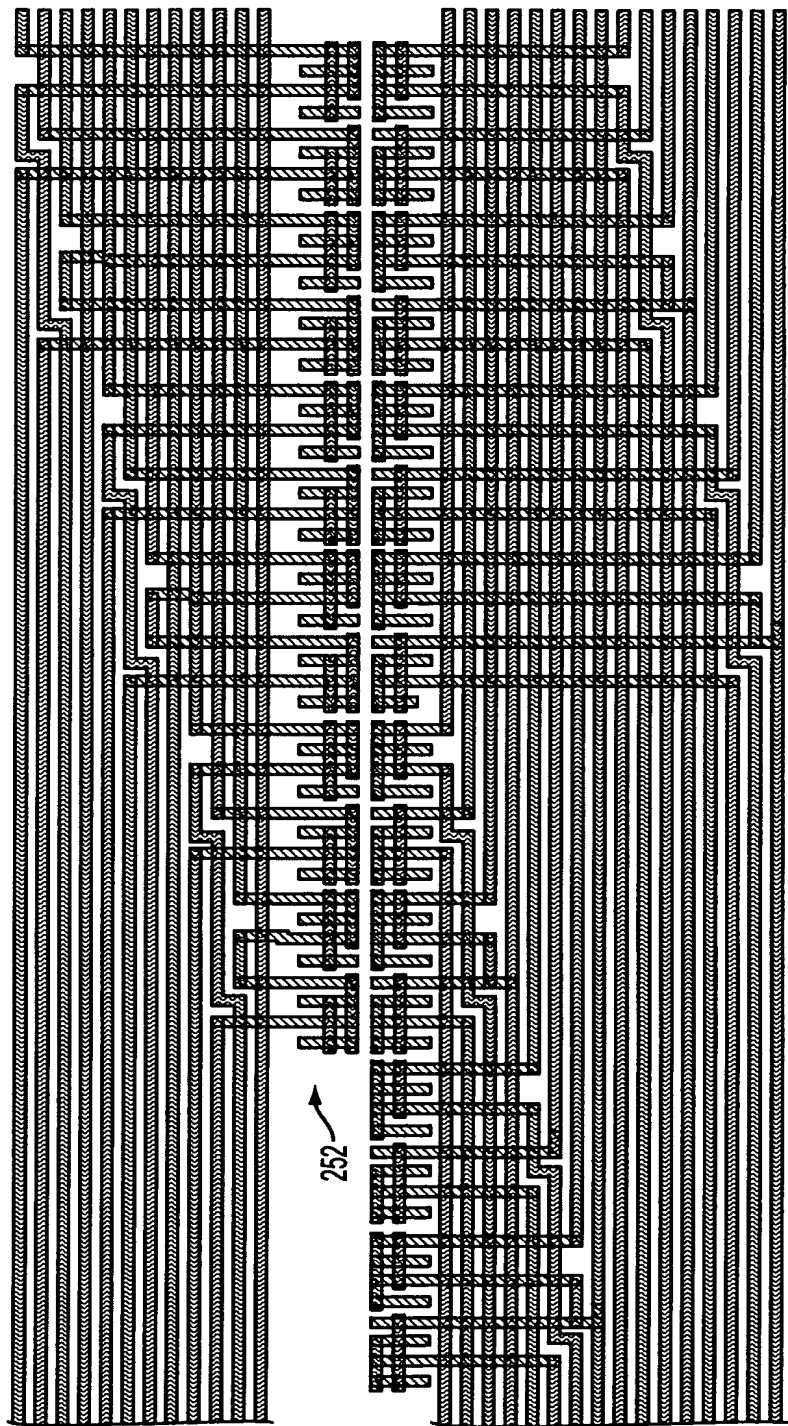


FIG. 25

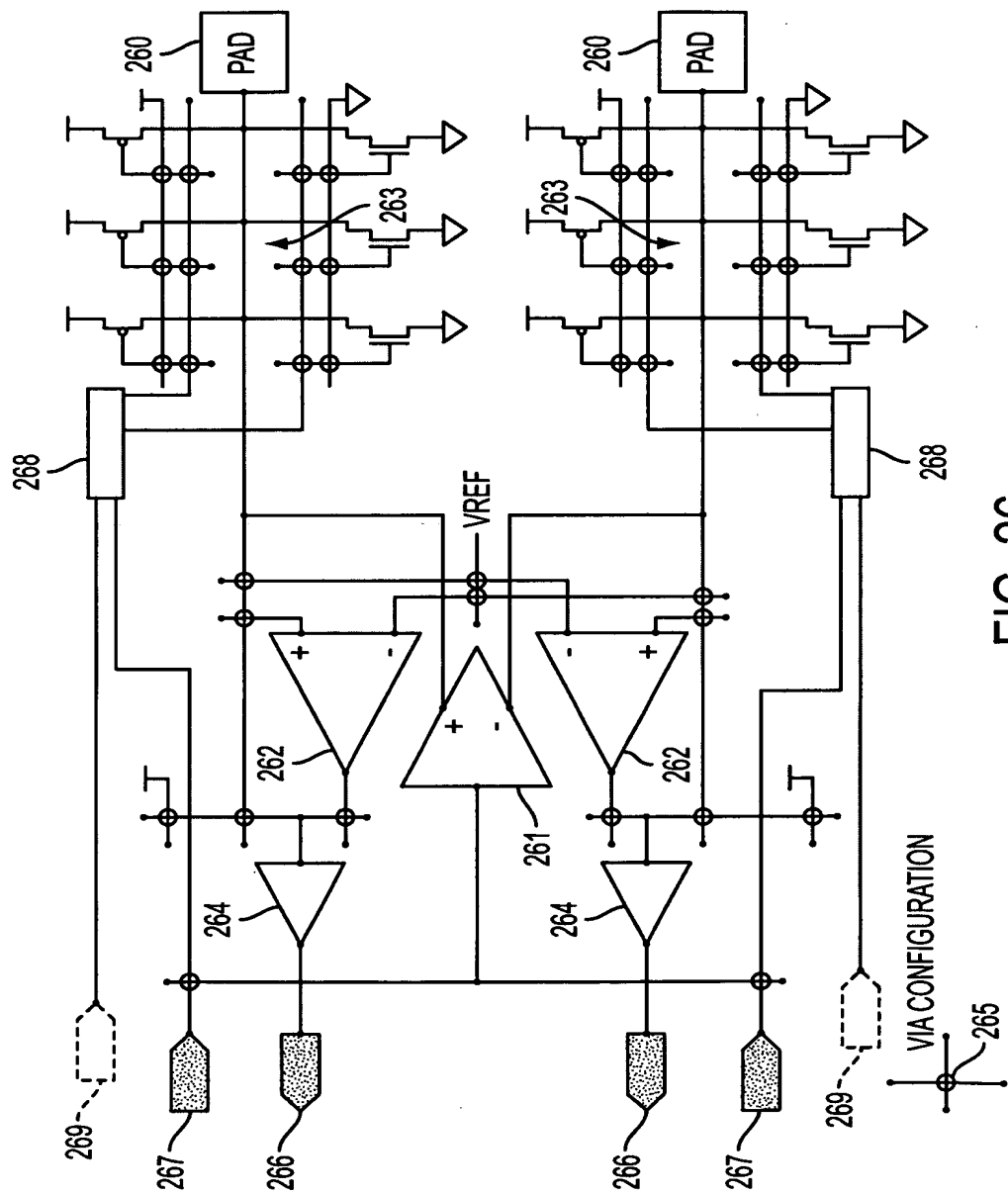


FIG. 26

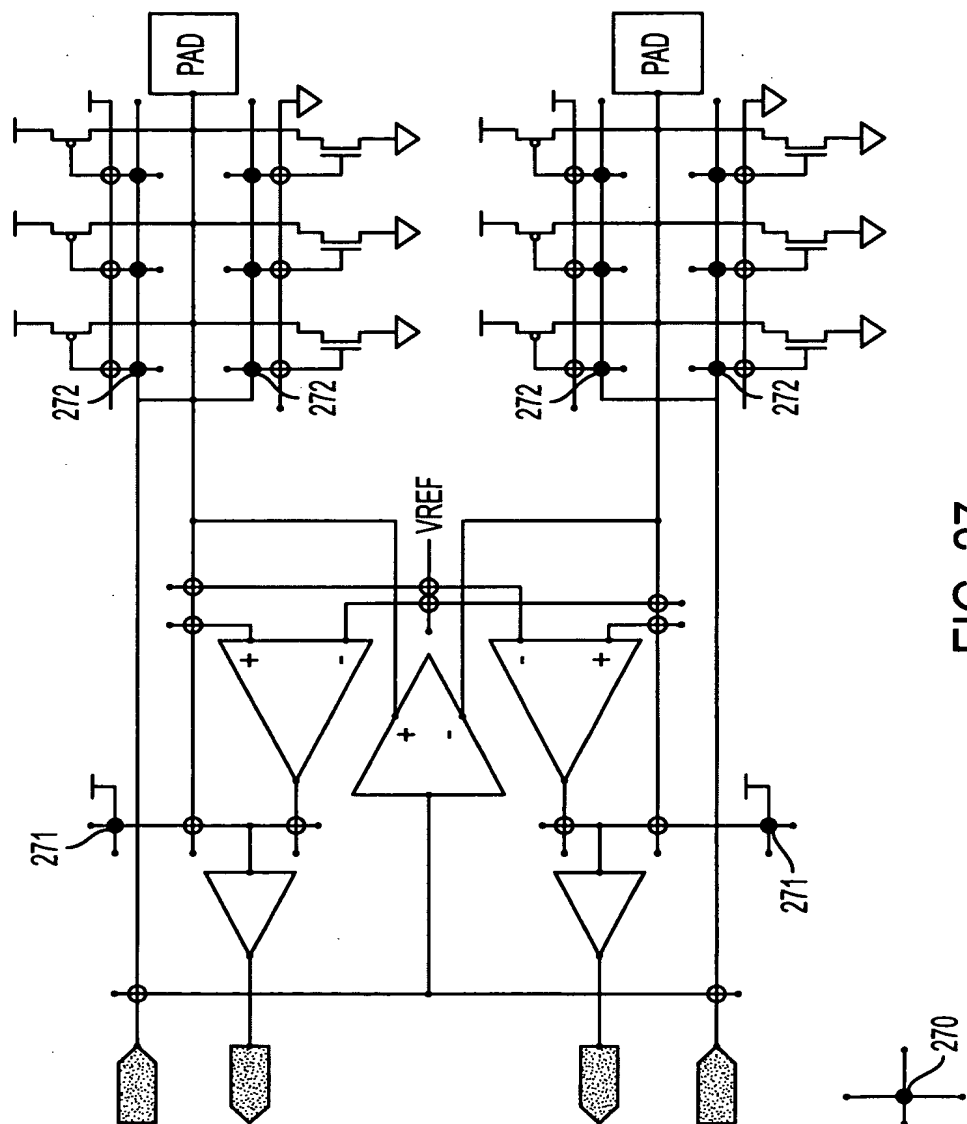


FIG. 27

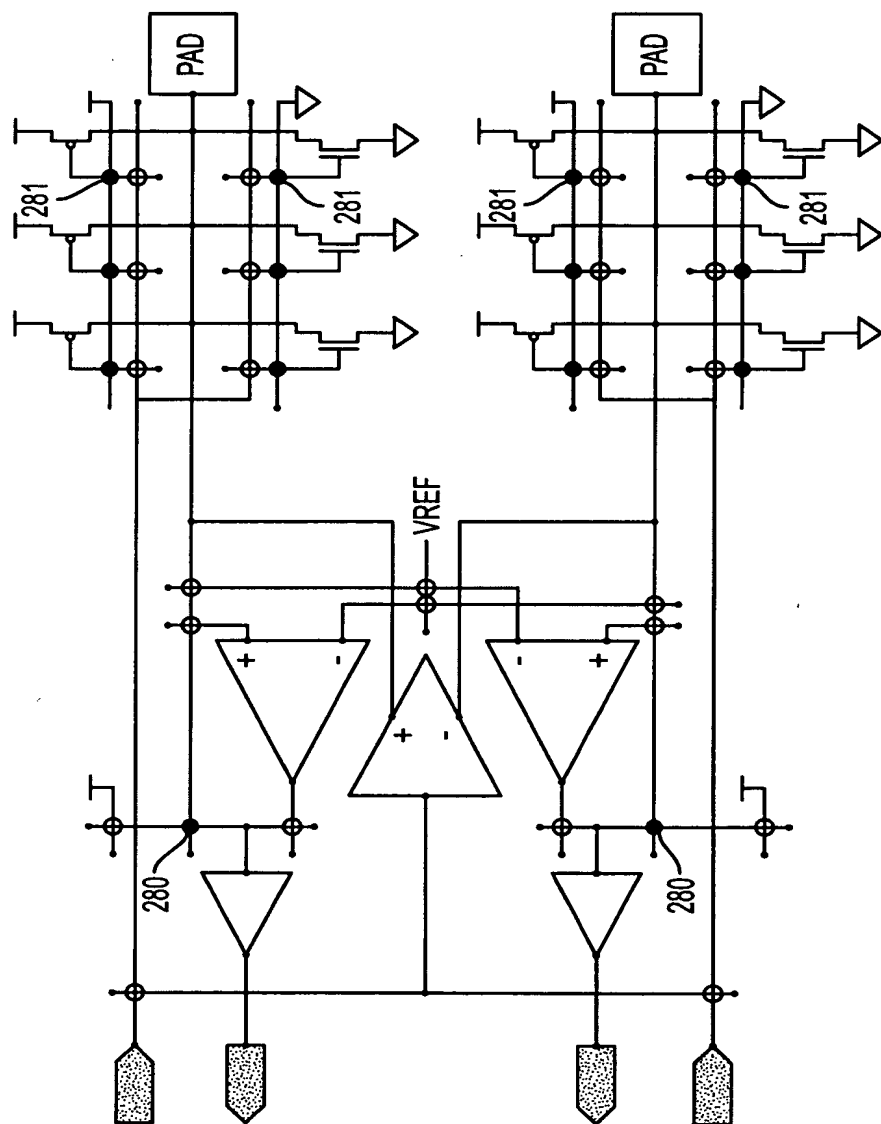


FIG. 28

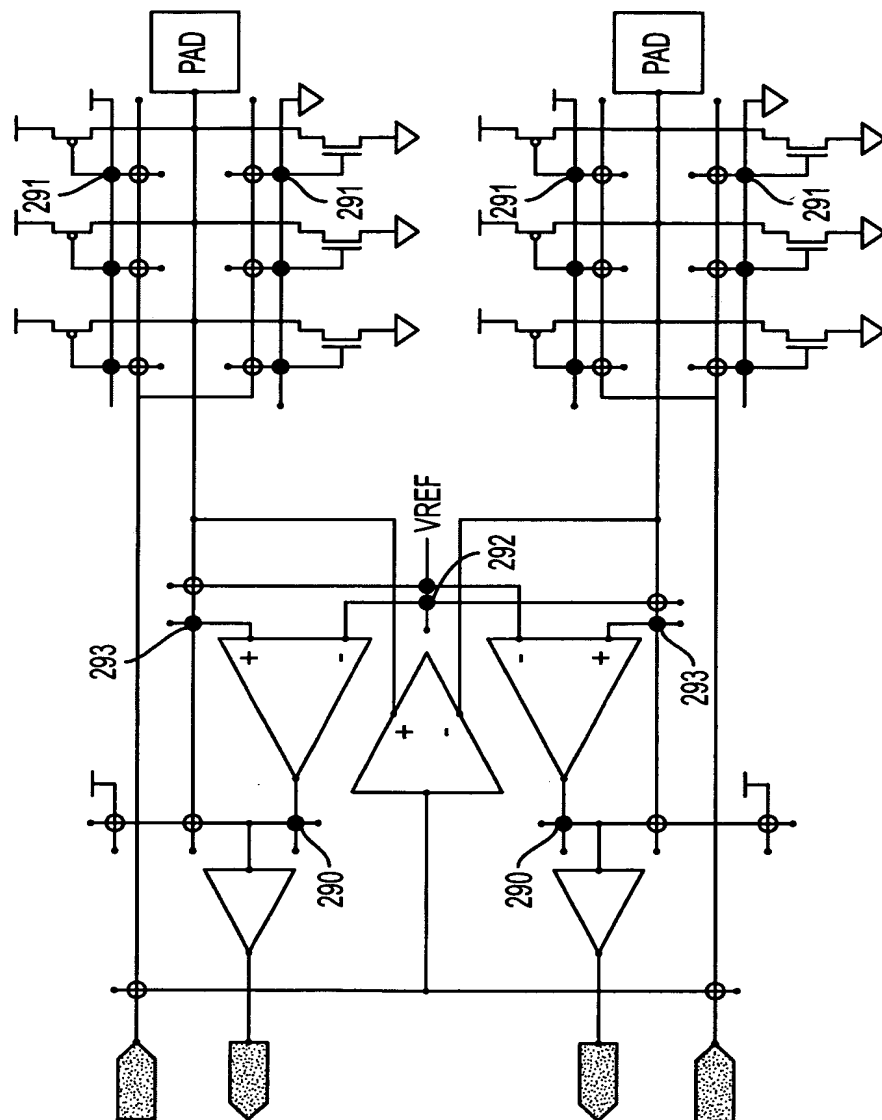


FIG. 29

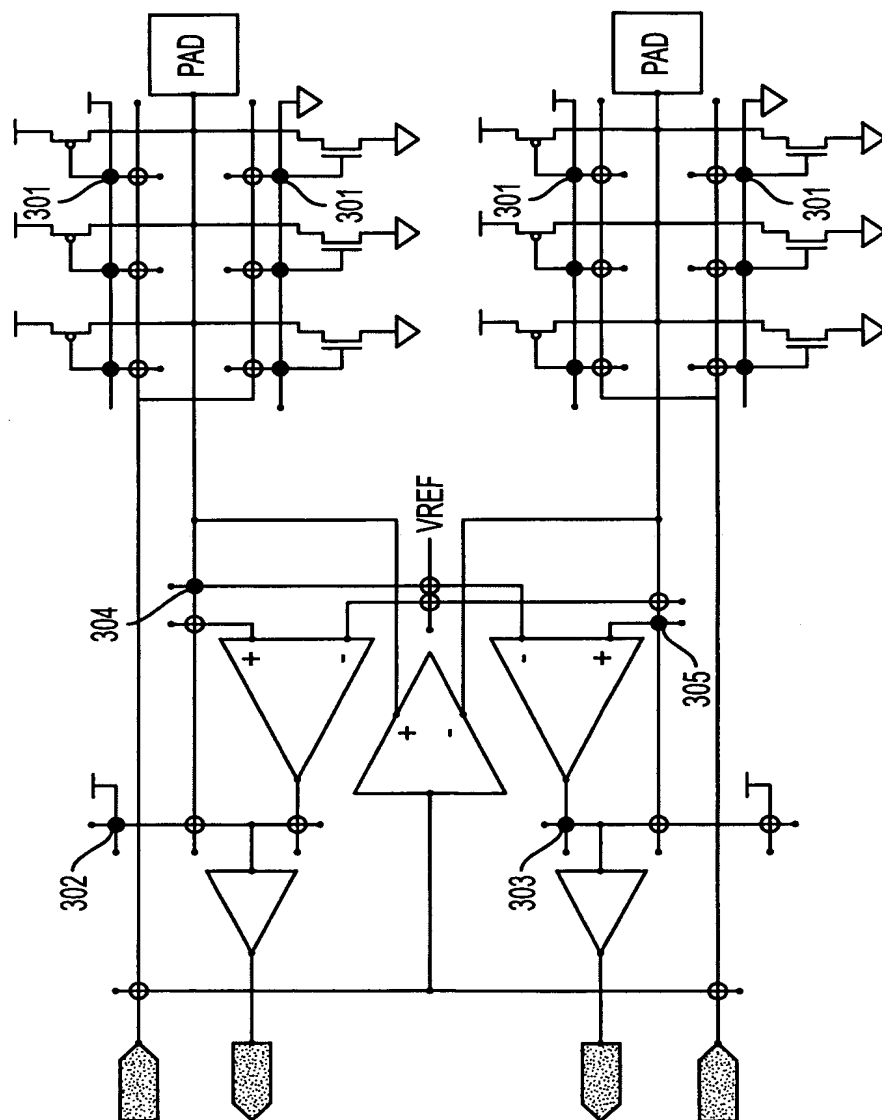


FIG. 30

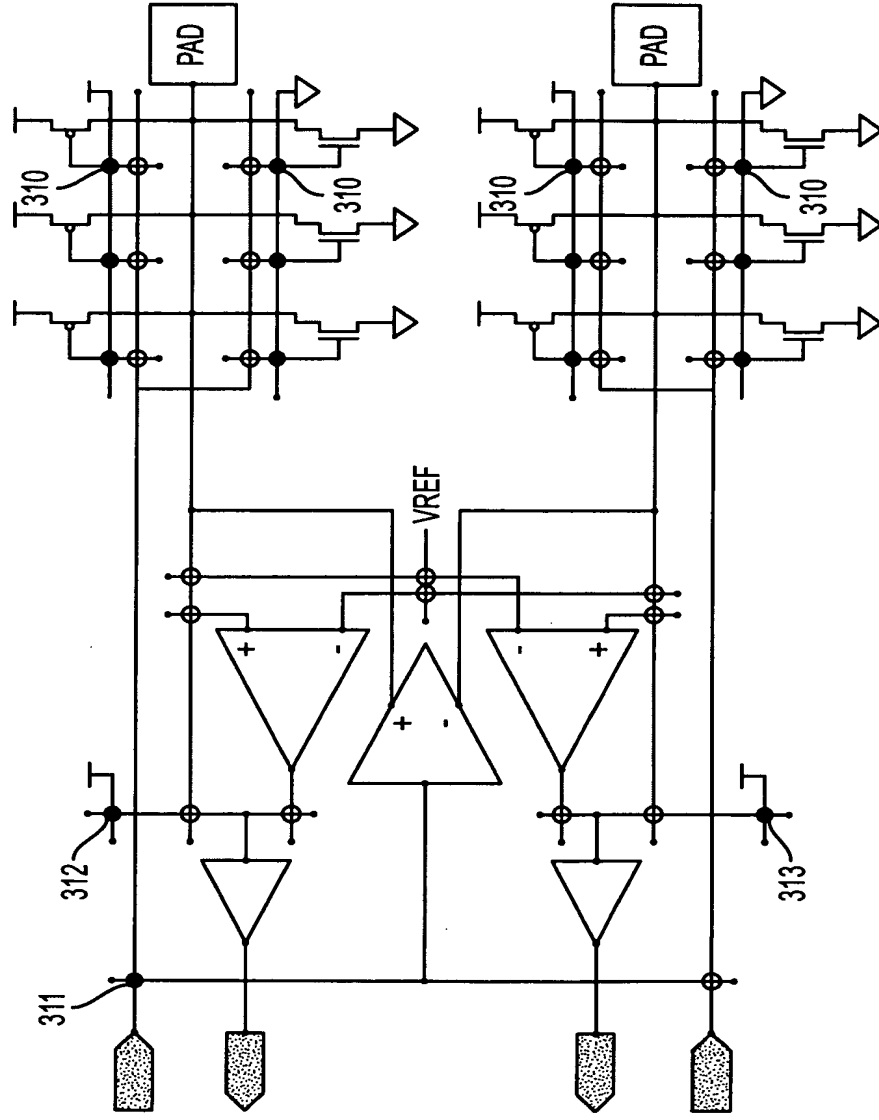


FIG. 31

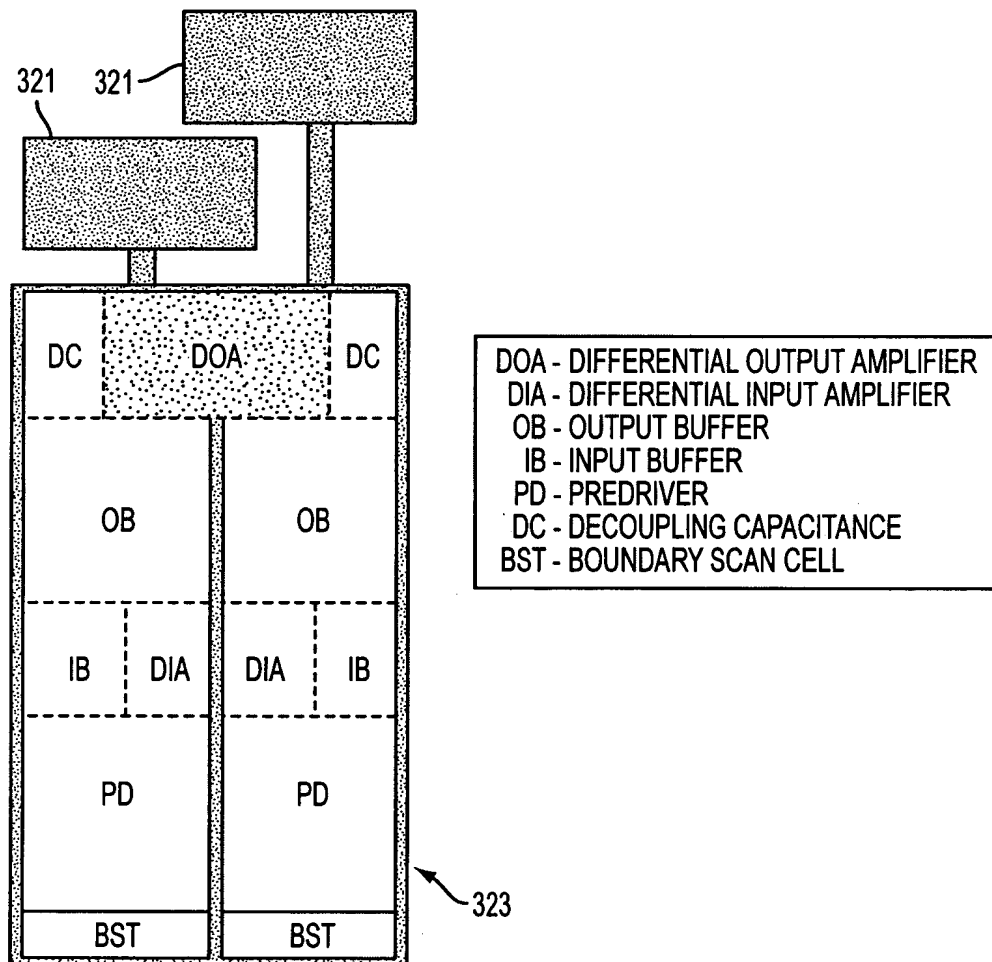


FIG. 32

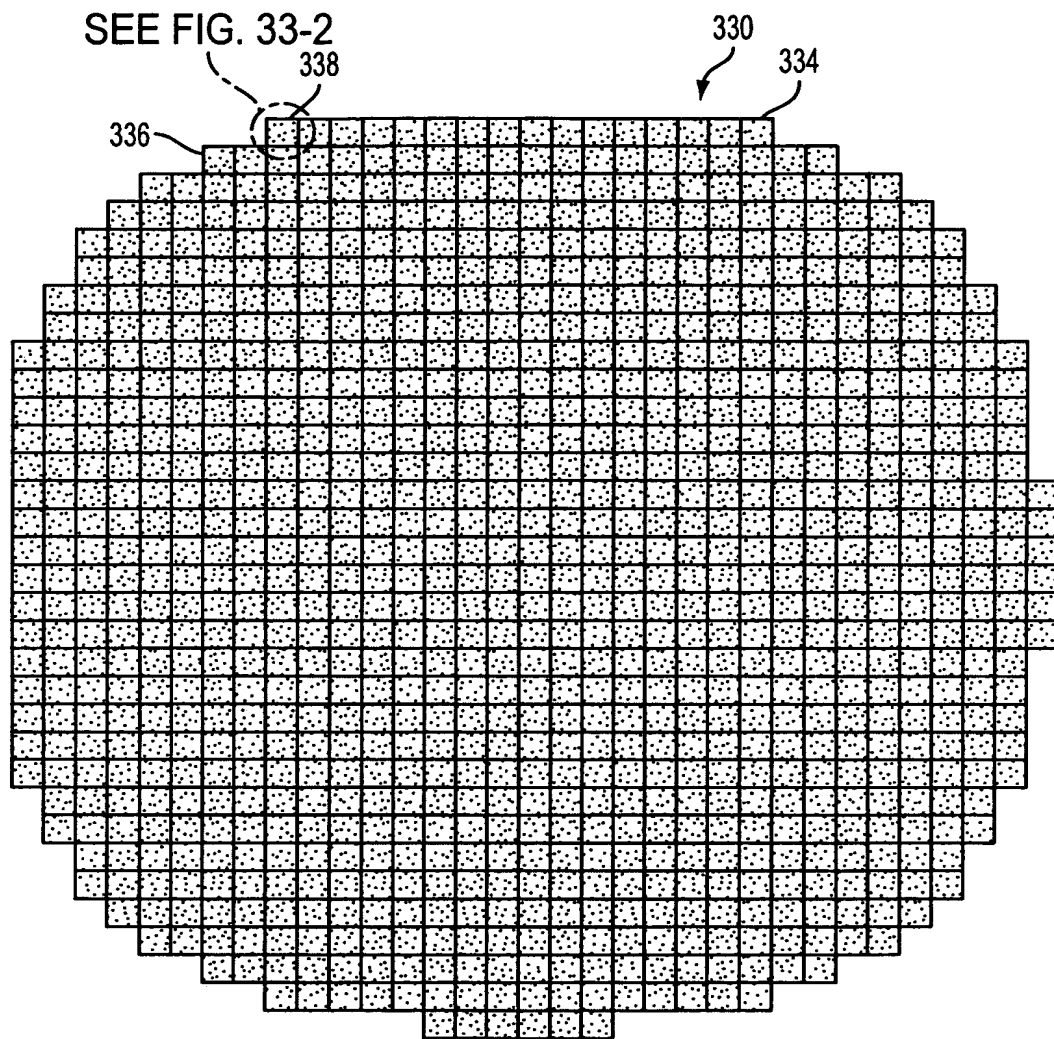


FIG. 33-1

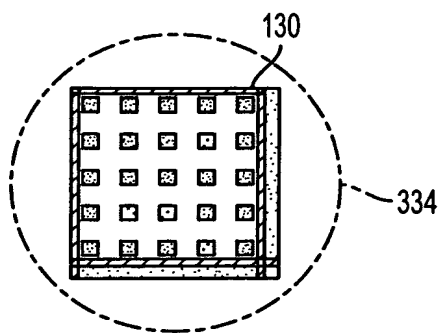


FIG. 33-2

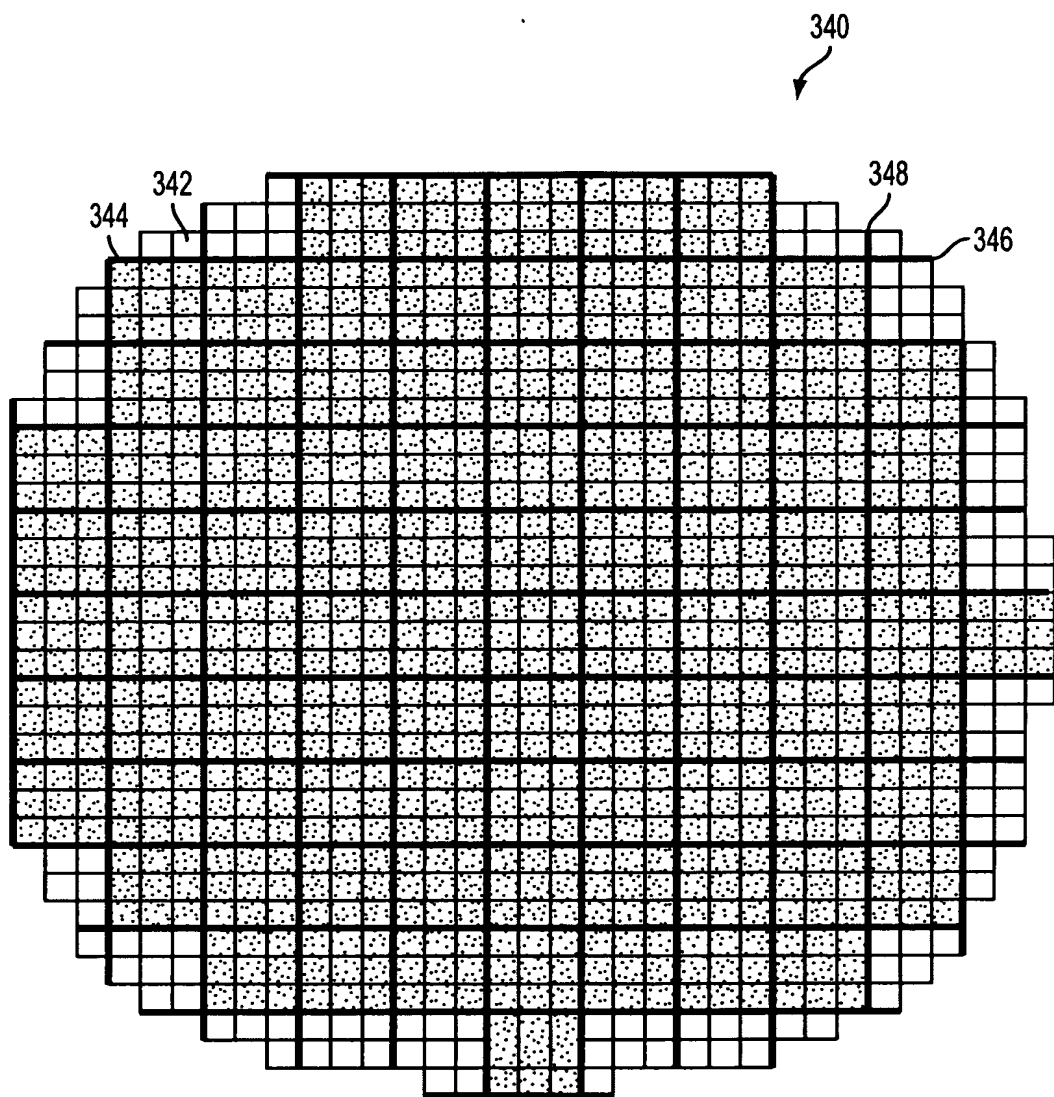


FIG. 34



FIG. 35

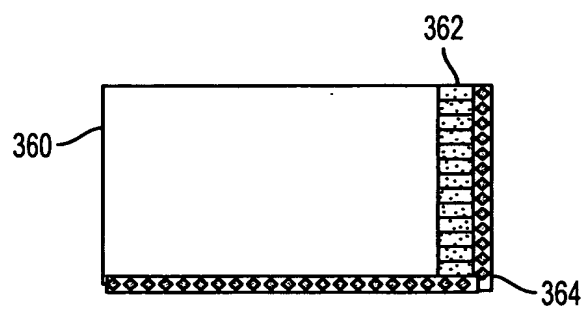


FIG. 36-A

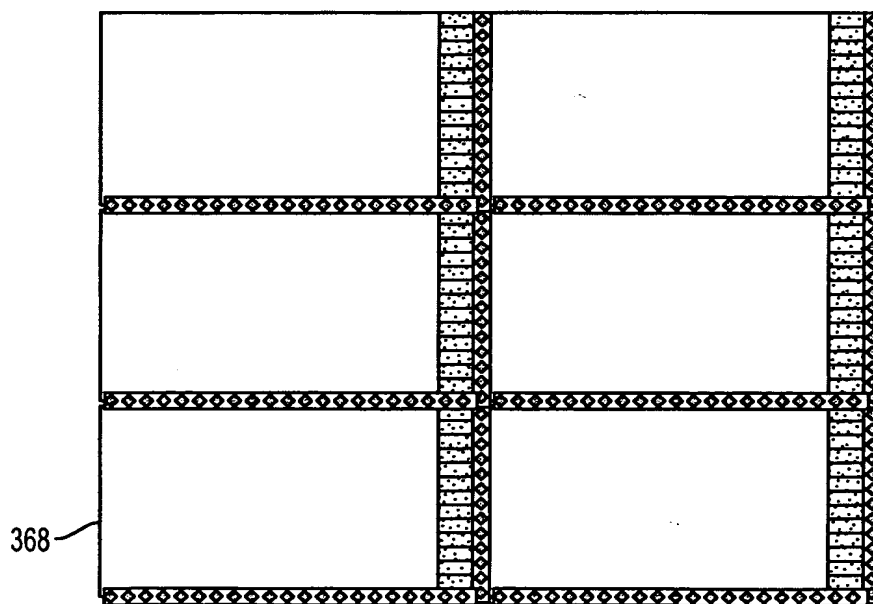


FIG. 36-B

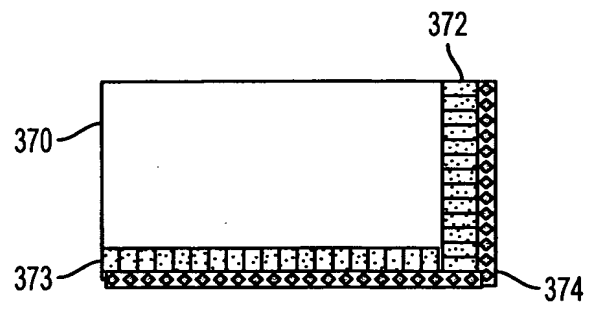


FIG. 37-A

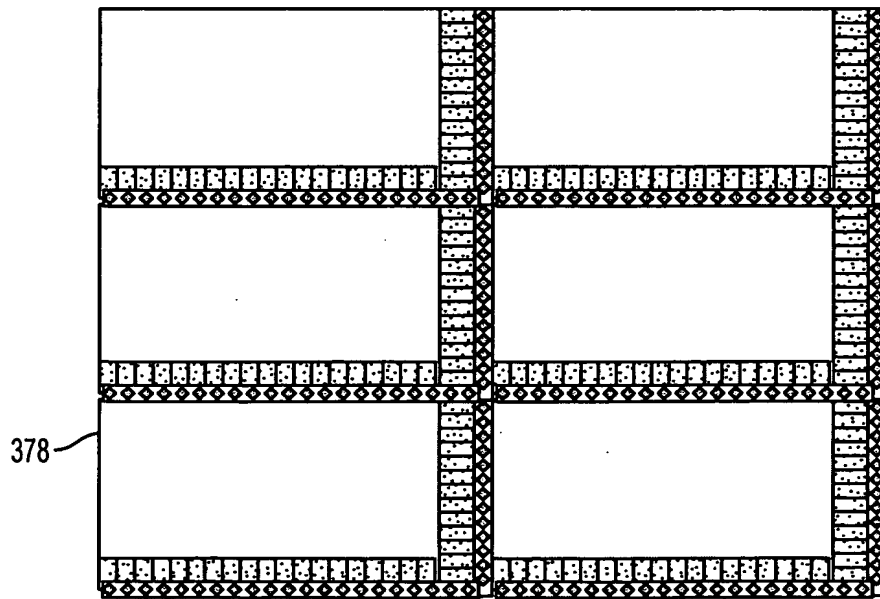


FIG. 37-B

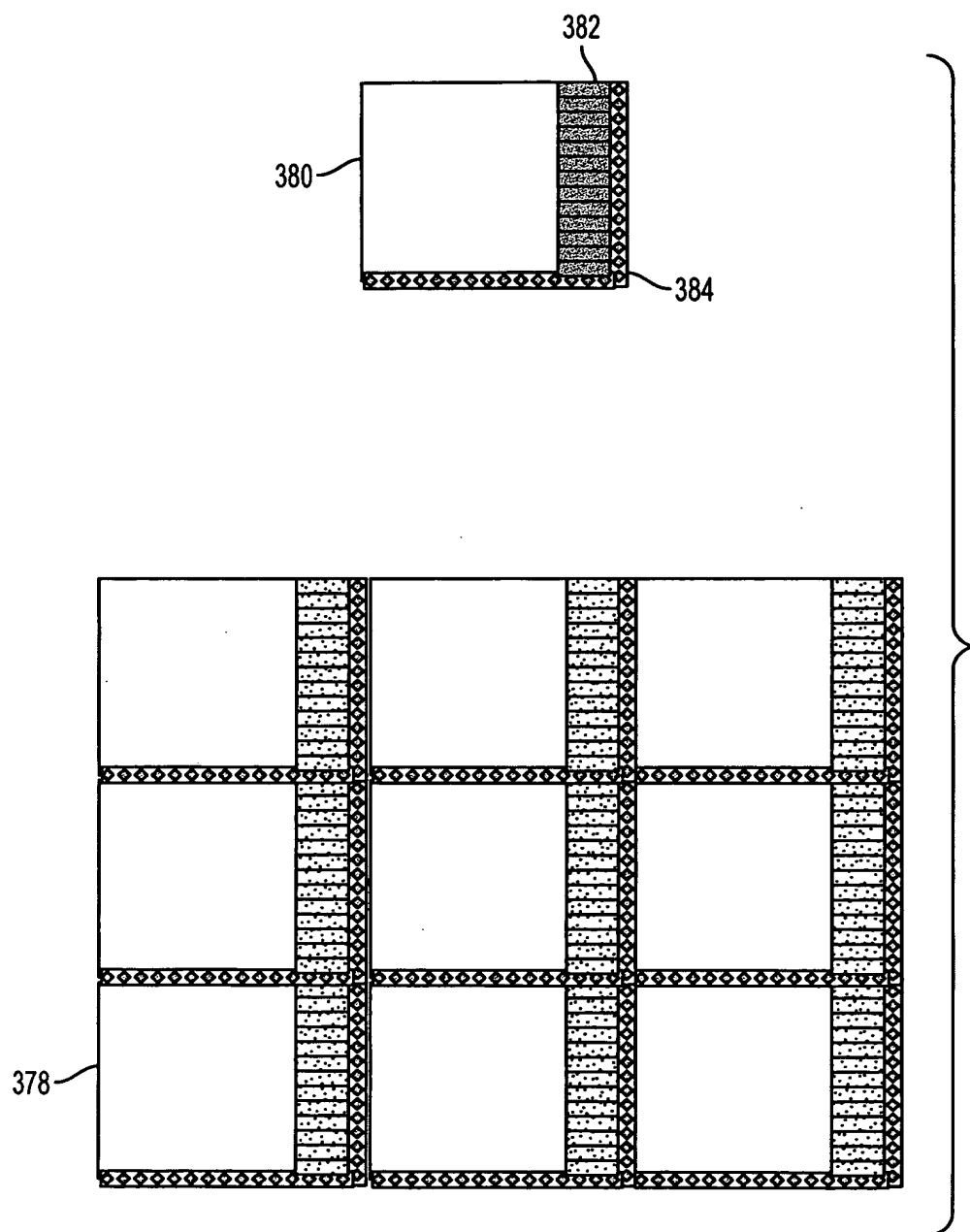


FIG. 38

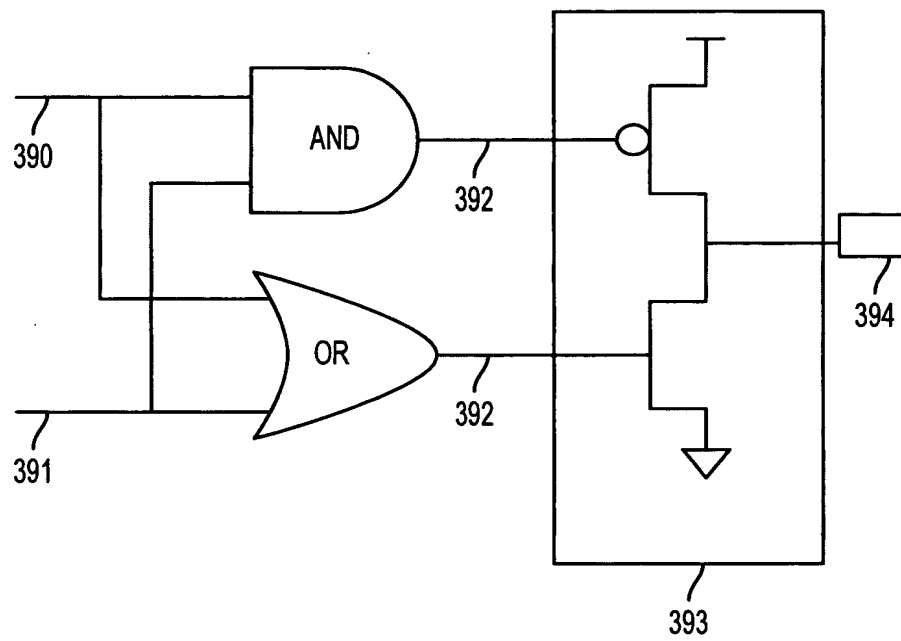


FIG. 39